

NASA Contractor Report 3739

NASA-CR-3739 19830028359

## Biomedical Research Publications: 1982-1983

FOR REFERENCE

NOT TO BE TAKEN FROM THIS ROOM

Christopher Bolcik and Linda G. Pleasant

CONTRACT NASW-3165  
OCTOBER 1983

LIBRARY COPY

OCT 2 1983

LANGLEY RESEARCH CENTER  
LIBRARY, NASA  
HAMPTON, VIRGINIA



25th Anniversary  
1958-1983

**NASA**



NASA Contractor Report 3739

# Biomedical Research Publications: 1982-1983

Christopher Bolcik and Linda G. Pleasant  
*The George Washington University*  
*Washington, D.C.*

Prepared for  
NASA Office of Space Science and Applications  
under Contract NASW-3165



National Aeronautics  
and Space Administration

Scientific and Technical  
Information Branch

1983



## CONTENTS

PREFACE . . . . .	v
CARDIOVASCULAR DECONDITIONING . . . . .	1
MOTION SICKNESS . . . . .	9
BONE ALTERATIONS . . . . .	17
MUSCLE ATROPHY . . . . .	22
BLOOD CELL ALTERATIONS . . . . .	25
FLUID AND ELECTROLYTE CHANGES . . . . .	28
RADIATION EFFECTS AND PROTECTION . . . . .	37
BEHAVIOR AND PERFORMANCE . . . . .	41
GENERAL BIOMEDICAL RESEARCH . . . . .	43



## PREFACE

The Biomedical Research Program, within the Office of Space Science and Applications of the National Aeronautics and Space Administration, was established to investigate the major physiological and psychological problems encountered by man when he undertakes spaceflight. The program seeks to obtain a better definition of each problem, and understanding of its underlying mechanism, and ultimately, a means of prevention. Research supported by this program is divided into the areas here listed: cardiovascular deconditioning; motion sickness, bone alterations, muscle atrophy; blood cell alterations; fluid and electrolyte changes; radiation effects and protection; behavior and performance; and, general biomedical research.

The arrangement of references in this bibliography follows the division of research described above. Articles are listed alphabetically by author under the research area with which they are most closely related. Only 1982-1983 publications which resulted from research supported by the Biomedical Research Program have been included. This listing is not complete; it only includes references identified and entered into the Life Sciences Bibliography Data Base as of July 1983.

Our intent in compiling this bibliography is twofold. First, we would like to provide the scientific community with a listing of current publications resulting from research pursued under the auspices of NASA's Biomedical Research Program. Secondly, we hope to stimulate the exchange of information and ideas among scientists working in the different areas of the program. To facilitate the exchange process, we have identified for each publication, by asterisk, the author participating in the program.





## Cardiovascular Deconditioning

1. Alexander\*, W.C., D.L. Spitler\*, D.F. Doerr, G.W. Hoffler\*, and P. Buchanan\*. Serum Haptoglobin Response to Maximal Exercise as a Function of Fitness in Men and Women (Abstract). Medicine and Science in Sports and Exercise 14: 146, 1982.
2. Benjamin, B.A., M.S. Shapiro, N.S. Bricker\*, and H.A. Sandler\*. Water Immersion in the Conscious Rhesus Monkey (Abstract). Physiologist 25(4): 298, 1982.
3. Billman, G.E., R.D. Brown, H.L. Stone\*, and D.C. Kem. The Effects of Dopamine and Metoclopramide on the Control of Plasma Aldosterone in the Rhesus Monkey (Abstract). Federation Proceedings 41: 1244, 1982.
4. Billman, G.E., D.T. Dickey, H. Sandler\*, and H.L. Stone\*. Effects of Horizontal Body Casting on the Baroreceptor Reflex Control of Heart Rate. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 52: 1552-1556, 1982.
5. Billman, G.E., D.T. Dickey, and H.L. Stone\*. A Description of the Upper Thoracic Autonomic Nervous System in the Rhesus Monkey (Macaca mulatta). American Journal of Primatology 2: 159-166, 1982.
6. Billman, G.E., M.J. Keyl, D.T. Dickey, D.C. Kem, L.C. Keil\*, and H.L. Stone\*. Hormonal and Renal Response to Plasma Volume Expansion in the Primate Macaca mulatta. American Journal of Physiology 244: H201-H205, 1983.
7. Blomqvist\*, C.G. Cardiovascular Adaptations to Physical Training. Annual Review of Physiology 45: 169-189, 1983.
8. Blomqvist\*, C.G. Cardiovascular Adaptation to Weightlessness. Paper Presented at the 12th Intersociety Conference on Environmental Systems, San Diego, CA, July 19-21, 1982, 7 p. (SAE-Paper-82-0830)
9. Blomqvist\*, C.G. Role of Exercise Training in Secondary Prevention of Ischemic Heart Disease. Preventive Medicine 12: 228-232, 1983.
10. Boettcher, D.H., M. Zimpfer, and S.F. Vatner\*. Phylogenesis of the Bainbridge Reflex. American Journal of Physiology 242: R244-R246, 1982.
11. Bricker\*, N.S. Sodium Homeostasis in Chronic Renal Disease. Kidney International 21: 886-897, 1982.

12. Bricker\*, N.S. and G.M. Danovitch. Extracellular Fluid Volume Regulation: On the Evidence for a Biologic Control System. In: The Kidney in Liver Disease, 2nd Edition (Epstein, M., ed.). New York: Elsevier Biomedical, p. 13-21, 1983.
13. Bristow, M.R., R. Ginsburg, and D.C. Harrison\*. Histamine and the Human Heart: The Other Receptor System. American Journal of Cardiology 49: 249-251, 1982.
14. Brown, R.D., G.E. Billman, D.C. Kem, H.L. Stone\*, N.-S. Jiang, P. Kao, and R.L. Hegstad. The Effect of Metoclopramide and Dopamine on Plasma Aldosterone Concentration in Normal Man and Rhesus Monkeys (Macaca mulatta): A New Model to Study Dopamine Control of Aldosterone Secretion. Journal of Clinical Endocrinology and Metabolism 55: 828-832, 1982.
15. Bueker, P.A.<sup>1</sup> Special Report on the Data Collection Programs for the Ground Based Nitrogen Washout Experiment. Volume 2: Detailed Program Descriptions, Listings, Examples and Hardware Specifications. Technology, Inc., Houston, TX, 209 p., July 30, 1982. (NASA-CR-167737)
16. Bungo\*, M.W. Crew Cardiovascular Profile. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 9, 1982. (NASA-TM-58245)
17. Bungo\*, M.W. Crew Cardiovascular Profile. In: STS-3 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 11, 1982. (NASA-TM-58247)
18. Bungo\*, M.W. Inflight Observations. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 3-4, 1982. (NASA-TM-58245)
19. Bungo\*, M.W. Inflight Observations. In: STS-3 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 3-4, 1982. (NASA-TM-58247)
20. Bungo\*, M.W. and O.S. Leland, Jr. Discordance of Exercise Thallium Testing with Coronary Arteriography in Patients with Atypical Presentations. Chest 83: 112-116, 1983.
21. Convertino\*, V.A., E.R. Morey\*, and J.E. Greenleaf\*. Reduction in Plasma Calcium During Exercise in Man (Letter). Nature 299: 658, 1982.

---

1. M.W. Bungo, Principal Investigator

22. Convertino\*, V.A. and H. Sandler\*. VO<sub>2</sub> Kinetics During Sub-maximal Exercise Following Simulated Weightlessness (Abstract). Physiologist 25(4): 303, 1982.
23. Convertino\*, V.A., H. Sandler\*, P. Webb, and J.F. Annis. Induced Venous Pooling and Cardiorespiratory Responses to Exercise After Bed Rest. Journal of Applied Physiology 52: 1343-1348, 1982.
24. Danovitch, G.M. and G.G. Krishna.<sup>1</sup> Renal Responses to Central Vascular Expansion in Nephrotic Syndrome (Abstract). Kidney International 21: 149, 1982.
25. Del Bo, A., A.F. Sved, and D.J. Reis\*. Fastigial Stimulation Releases Vasopressin in Amounts That Elevate Arterial Pressure. American Journal of Physiology 244: H687-H694, 1983.
26. Dickey, D.T., G.E. Billman, M.J. Keyl, D.A. Kem, L.C. Keil\*, H. Sandler\*, and H.L. Stone\*. Hormonal and Renal Responses to Plasma Volume Expansion After Horizontal Restraint in the Rhesus Monkey (Abstract). Physiologist 25(4): 196, 1982.
27. Dickey, D.T., G.E. Billman, M.J. Keyl, D.A. Kem, L.C. Keil\*, H. Sandler\*, and H.L. Stone\*. Hormonal and Renal Responses to Plasma Volume Expansion After Horizontal Restraint in the Rhesus Monkey. Physiologist 25(6, Suppl.): S75-S76, 1982.
28. Dickey, D.T., G.E. Billman, K. Teoh, H. Sandler\*, and H.L. Stone\*. The Effects of Horizontal Body Casting on Blood Volume, Drug Responsiveness, and +G<sub>z</sub> Tolerance in the Rhesus Monkey. Aviation, Space, and Environmental Medicine 53: 142-146, 1982.
29. Eckberg\*, D.L. Human Sinus Arrhythmia as an Index of Vagal Cardiac Outflow. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 961-966, 1983.
30. Eckberg\*, D.L. Parasympathetic Cardiovascular Control in Humans. In: Excitation and Neural Control of the Heart (Levy, M.N. and M. Vassalle, eds.). Bethesda, MD: American Physiological Society, p. 275-297, 1982.
31. Eckberg\*, D.L., H. Bastow III, and A.E. Scruby. Modulation of Human Sinus Node Function by Systemic Hypoxia. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 52: 570-577, 1982.
32. Eckberg\*, D.L. and M.J. Eckberg. Human Sinus Node Responses to Repetitive, Ramped Carotid Baroreceptor Stimuli. American Journal of Physiology 242: H638-H644, 1982.

---

1. N.S. Bricker, Principal Investigator

33. Ellis, A.K., J.C. Giacomini, R. Kernoff, and D.C. Harrison\*. Effects of Increased Right Ventricular Pressure on Coronary Blood Flow Distribution (Abstract). Federation Proceedings 42: 1002, 1983.
34. Fryer, T.B. and H. Sandler\*. Telemetry Methods for Monitoring Physiological Parameters. In: Hypertension Research: Methods and Models (Radzialowski, F.M., eds.). New York: Marcel Dekker, p. 45-82, 1982. (Modern Pharmacology - Toxicology Series, Vol. 19)
35. Gaffney, F.A., R.J. Anderson, J.V. Nixon, and C.G. Blomqvist\*. Cardiovascular Function in Patients with Progressive Systemic Sclerosis (Scleroderma). Clinical Cardiology 5: 569-576, 1982.
36. Gaffney, F.A., B.C. Bastian, E.R. Thal, J.M. Atkins, and C.G. Blomqvist\*. Passive Leg Raising Does Not Produce a Significant or Sustained Autotransfusion Effect. Journal of Trauma 22: 190-193, 1982.
38. Gaffney, F.A., L.B. Lane, W. Pettinger, and C.G. Blomqvist\*. Effects of Long-term Clonidine Administration on the Hemodynamic and Neuroendocrine Postural Responses of Patients with Dysautonomia. Chest 83(2, Suppl.): 436-438, 1983.
39. Gagnol, J.P., P.J. Schwartz, G.E. Billman, and H.L. Stone\*. Hemodynamic Response to Exercise Following Oral Administration of Amiodarone (Abstract). Federation Proceedings 42: 1289, 1983.
40. Goldwater\*, D.J., D.B. O'Hara, and H. Sandler\*. Increased Hematuria Following Hypergravic Exposure in Middle-Aged Women (Abstract). Physiologist 25(4): 304, 1982.
41. Guo, G.B., F.M. Abboud\*, and M.D. Thames. Impaired Baroreflex Control of Heart Rate is Due to Abnormality in Baroreceptors (Abstract). Federation Proceedings 41: 1514, 1982.
42. Gupta, V.N., P.K. Bhagat\*, C.E. Ott., and A.M. Fried. Ultrasonic Characterization of Acute Renal Failure. Ultrasound in Medicine and Biology 8: 249-261, 1982.
43. Halpryn, B.M., D. Murrish, F. Sulzman\*, and H. Sandler\*. Cardiovascular Circadian Rhythms in Rhesus Monkeys (Abstract). Physiologist 25(4): 189, 1982.
44. Jennings, J.R., S.W. Harkins, and D.L. Eckberg\*. Performance and Heart Rate During Carotid Baroreceptor Suction and Pressure in Man: A Preliminary Report (Abstract). Psychophysiology 19: 326-327, 1982.
45. Johnson\*, R.L. and M.W. Bungo\*. The Diagnostic Accuracy of Exercise Electrocardiography: A Review. Aviation, Space, and Environmental Medicine 54: 150-157, 1983.

46. Krishna, G.G. and G.M. Danovitch.<sup>1</sup> Evidence for Non-Renin-Dependent Adrenal Response to Central Volume Expansion (CVE) (Abstract). Clinical Research 30: 79A, 1982.
47. Krishna, G.G. and G.M. Danovitch.<sup>1</sup> Marked Attenuation of Natriuresis Following Central Volume Expansion (CVE) at Night (Abstract). Kidney International 21: 280, 1982.
48. Krishna, G.G., A.R. Nissenson, J. Shinaberger, and G.M. Danovitch.<sup>1</sup> Renal and Hemodynamic Responses to Lower Body Positive Pressure Using Military Anti-Shock Trousers (MAST) (Abstract). Clinical Research 30: 79A, 1982.
49. Lee, J.T., R.E. Kates, R.A. Winkle, and D.C. Harrison\*. Post-Tachycardia Cardiac Standstill: A Disopyramide-Verapamil Interaction in Dogs (Abstract). Clinical Research 31: 12A, 1983.
50. Lee, J.T., R.E. Kates, R.A. Winkle, and D.C. Harrison\*. Post-Tachycardia Cardiac Standstill: A Disopyramide-Verapamil Interaction in Dogs (Abstract). Journal of the American College of Cardiology 1: 700, 1983.
51. Levitan, B.M. and M.W. Bungo\*. Measurement of Cardiopulmonary Performance During Acute Exposure to a 2440-m Equivalent Atmosphere. Aviation, Space, and Environmental Medicine 53: 639-642, 1982.
52. Levitan, B.M., L.D. Montgomery, P.K. Bhagat\*, and J.F. Zieglschmid. A Comparison of Limb Plethysmograph Systems Proposed for Use on the Space Shuttle. Aviation, Space, and Environmental Medicine 54: 6-10, 1983.
53. Levy, M.N. and J.M. Talbot\* (eds.). Research Opportunities in Cardiovascular Deconditioning: Final Report Phase I. Federation of American Societies for Experimental Biology, Bethesda, MD, 72 p., 1983.
54. Lewis, S.F., W.F. Taylor, B.C. Bastian, R.M. Graham, W.A. Pettinger, and C.G. Blomqvist\*. Haemodynamic Responses to Static and Dynamic Handgrip Before and After Autonomic Blockade. Clinical Science 64: 593-599, 1983.
55. Lewis, S.F., W.F. Taylor, R.M. Graham, W.A. Pettinger, J.E. Schutte, and C.G. Blomqvist\*. Cardiovascular Responses to Exercise as Functions of Absolute and Relative Work Load. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 1314-1323, 1983.

---

1. N.S. Bričker, Principal Investigator

56. Licht, A., N.D. Weiss, and N.S. Bricker\*. Inhibition of 3T6 Fibroblasts Sodium Transport by the Natriuretic Factor (NF) of Uremic Human Urine Using Reverse Phase Chromatography (Abstract). Kidney International 21: 262, 1982.
57. Manders, W.T., M. Zimpfer, and S.F. Vatner\*. Role of the Spleen in the Response to Hemorrhage in the Conscious Dog (Abstract). Physiologist 25(4): 263, 1982.
58. Meehan\*, J.P. and J.P. Henry. ADH Responses to Volume Shifts in the Low Pressure System. Physiologist 25(6, Suppl.): S17-S20, 1982.
59. Meindl\*, J.D. Implantable Telemetry for Small Animals. Final Report, 1 December 1980 - 30 November 1981. NASA, Ames Research Center, Moffett Field, CA, 37 p., March 1982. (TR-DXG562-F)
60. Mulvihill-Wilson, J., F.A. Gaffney, W.A. Pettinger, C.G. Blomqvist\*, S. Anderson, and R.M. Graham. Hemodynamic and Neuroendocrine Responses to Acute and Chronic Alpha-adrenergic Blockade with Prazosin and Phenoxybenzamine. Circulation 67: 383-392, 1983.
61. Nixon, J.V., R.G. Murray, P.D. Leonard, J.H. Mitchell, and C.G. Blomqvist\*. Effect of Large Variations in Preload on Left Ventricular Performance Characteristics in Normal Subjects. Circulation 65: 698-703, 1982.
62. Patrick, T.A., W.T. Manders, and S.F. Vatner\*. Pentobarbital Depresses Splenic Contraction in Response to Hemorrhage (Abstract). Physiologist 25(4): 263, 1982.
63. Philpott\*, D.E., A. Fine, F. D'Amelio, K. Kato, and R. Corbett. The Effect of Hypokinesia on the Heart: Ultrastructure and Biochemical Observations (Abstract). Journal of Cell Biology 95: 359a, 1982.
64. Raczowska, M., T.J. Ebert, and D.L. Eckberg\*. Correlation Between Sinus Arrhythmia and Baroreflex Responsiveness in Man (Abstract). Federation Proceedings 41: 1604, 1982.
65. Sandler\*, H. Cardiovascular Responses to Weightlessness and Ground-Based Simulations. In: Zero-G Simulation for Ground-Based Studies in Human Physiology, with Emphasis on the Cardiovascular and Body Fluid Systems, Proceedings of a Workshop, Toulouse, France, March 4-5, 1982. Paris, France: European Space Agency, p. 107-146, 1982. (ESA-SP-180)
66. Sandler\*, H. Cardiovascular Responses to Weightlessness and Prolonged Bedrest. In: A Critical Review of the U.S. and International Research on Effects of Bedrest on Major Body Systems (Nicogossian, A.E. and C.S. Lewis, eds.). Washington, D.C.: NASA p. 3-80, 1982.

67. Sandler\*, H. and T.F. Budinger. Recent Advances in Physiological Monitoring: Opening Remarks. Physiologist 26(1): 29-30, 1983.
68. Sandler\*, H., D. Dolkas, J.F. Annis, and P. Webb. Physiologic Effects of Induced Venous Pooling During Simulated Weightlessness. In: Preprints of 1982 Annual Scientific Meeting, Aerospace Medical Association, Bal Harbour, Fl, May 10-13. Washington, D.C.: Aerospace Medical Association, p. 204-205, 1982.
69. Sandler\*, H. and J.D. Meindl\*. Telemetry Methods: Animal and Man. Physiologist 26(1): 47-50, 1983.
70. Selzer\*, R.H. Atherosclerosis Quantitation by Computer Image Analysis. In: Clinical Diagnosis of Atherosclerosis: Quantitative Methods of Evaluation (Bond, M.G., et al., eds.). New York: Springer-Verlag, p. 43-65, 1983.
71. Selzer\*, R.H. and D.H. Blankenhorn. The Identification of the Variation of Atherosclerosis Plaques by Invasive and Non-Invasive Methods. In: Atherosclerosis: Clinical Evaluation and Therapy (Lenzi, S. and G.C. Descovich, eds.). Boston: MTP Press, p. 453-465, 1982.
72. Selzer\*, R.H., D.H. Blankenhorn, S.H. Brooks, D.W. Crawford, and W.L. Cashin. Computer Assessment of Atherosclerosis from Angiographic Images. IEEE Transactions on Nuclear Science NS-29: 1198-1207, 1982.
73. Sordahl, L.A. and H.L. Stone\*. Alterations in Mitochondria and Sarcoplasmic Reticulum from Heart and Skeletal Muscle of Horizontally Casted Primates (Abstract). Physiologist 25(4): 303, 1982.
74. Sordahl, L.A. and H.L. Stone\*. Alterations in Mitochondria and Sarcoplasmic Reticulum from Heart and Skeletal Muscle of Horizontally Casted Primates Physiologist 25(6, Suppl.): S149-S150, 1982.
75. Talbot\*, J.M. (ed.). Research Opportunities in Space Motion Sickness: Final Report Phase II. Federation of American Societies for Experimental Biology, Bethesda, MD, 61 p., February 1983.
76. Townsend, E.J., J.E. Schutte, J. Hugg, R. Schoup, R. Malina, and C.G. Blomqvist\*. The Density of the Lean Body Mass is Greater in Blacks Than in Whites (Abstract). American Journal of Physical Anthropology 60: 262, 1983.
77. Vatner, D.E., S.F. Vatner\*, S.P. Sit, and J.S. Ingwall. Alteration of Creatine Kinase and Its Isozymes in Response to Pressure Overload Left Ventricular Hypertrophy (Abstract). Physiologist 25(4): 191, 1982.

78. Waligora\*, J.M., D.J. Horrigan\*, Jr., M.W. Bungo\*, and J. Conkin. Investigation of the Combined Effects of Bedrest and Mild Hypoxia. Aviation, Space, and Environmental Medicine 53: 643-646, 1982.
79. Walley, K.R., M. Grover, G.L. Raff, J.W. Benge, B. Hannaford, and S.A. Glantz.<sup>1</sup> Left Ventricular Dynamic Geometry in the Intact and Open Chest Dog. Circulation Research 50: 573-589, 1982.
80. Wallin, B.G. and D.L. Eckberg\*. Sympathetic Transients Caused by Abrupt Alterations of Carotid Baroreceptor Activity in Humans. American Journal of Physiology 242: H185-H190, 1982.
81. West\*, J.B., H.B. Guy, and D.B. Michels. Effects of Weightlessness on Pulmonary Function. Physiologist 25(6, Suppl.): S21-S24, 1982.
82. Wu, V.C., W.T. Nickell, and P.K. Bhagat\*. A Practical Ultrasonic Plethysmograph. Aviation, Space, and Environmental Medicine 53: 375-378, 1982.
83. Zimpfer, M., W.T. Manders, A.C. Barger, and S.F. Vatner\*. Effects of Pentobarbital Anesthesia on Sympatho-Adrenal and Renin-Angiotensin Systems (Abstract). Physiologist 25(4): 263, 1982.
84. Zimpfer, M., W.T. Manders, A.C. Barger, and S.F. Vatner\*. Pentobarbital Alters Compensatory Neural and Humoral Mechanisms in Response to Hemorrhage. American Journal of Physiology 243: H713-H721, 1982.

---

1. King, F. and Sandler, H., Co-Principal Investigators



## Motion Sickness

85. Abend, W., E. Bizzi\*, and P. Morasso. Human Arm Trajectory Formation. Brain 105: 331-348, 1982.
86. Anderson\*, D.J., S.A.S. Werness, J.E. Pugh, R.O. Andres, and M.P. Houseal. Features of Transient Induced Body Sway (Abstract). Presented at the 5th Midwinter Research Meeting, Association for Research in Otolaryngology, St. Petersburg, FL, January 18-21, 1982.
87. Baker, J., J. Goldberg\*, B. Peterson, and R. Schor. Oculomotor Reflexes after Semicircular Canal Plugging in Cats. Brain Research 252: 151-155, 1982.
88. Bilotto, G., R.H. Schor, Y. Uchino, and V.J. Wilson\*. Localization of Proprioceptive Reflexes in the Splenius Muscle of the Cat. Brain Research 238: 217-221, 1982.
89. Bizzi\*, E.. Central Processes Involved in Arm Movement Control. In: The Production of Speech (MacNeilage, P.F., ed.). New York: Springer-Verlag, p. 3-10, 1983.
90. Bizzi\*, E. and W. Abend. Posture Control and Trajectory Formation in Single and Multiple Joint Arm Movements. In: Motor Control Mechanisms in Health and Disease (Desmedt, J.E., ed.). New York: Raven, p. 31-45, 1983.
91. Bizzi\*, E., N. Accornero, W. Chapple, and N. Hogan. Arm Trajectory Formation in Monkeys. Experimental Brain Research 46: 139-143, 1982.
92. Bizzi\*, E., W. Chapple, and N. Hogan. Mechanical Properties of Muscles: Implications for Motor Control. Trends in Neurosciences 5: 395-398, 1982.
93. Bludworth, B., M.F. Reschke\*, and J.L. Homick\*. Modification of Responses from the Horizontal Semicircular Canals as a Function of Hyper-Gravity and Weightlessness. In: Preprints of 1982 Annual Scientific Meeting, Aerospace Medical Association, Bal Harbour, FL, May 10-13, 1982. Washington, D.C.: Aerospace Medical Association, p. 89-90, 1982.
94. Bludworth, B., M.F. Reschke\*, and J.L. Homick\*. Modification of Responses from the Vertical Semicircular Canals as a Function of Hyper-Gravity; Weightlessness and Motion Sickness. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 164-165, 1983.
95. Bock, O.L. and C.M. Oman\*. Dynamics of Subjective Discomfort in Motion Sickness as Measured with a Magnitude Estimation Method. Aviation, Space, and Environmental Medicine 53: 773-777, 1982.

96. Brizzee\*, K.R. and W. Dunlap. Motion-Induced Alterations in 2-Deoxyglucose Uptake in Brain Stem Nuclei of Squirrel Monkeys as Demonstrated by Sequential Double-Label Method (Abstract). Society for Neuroscience Abstracts 8: 700, 1982.
97. Brizzee\*, K.R., J.M. Ordy, and A.N. D'Agostino. Morphological Changes of the Central Nervous System After Radiation Exposure in utero. In: Developmental Effects of Prenatal Irradiation (Kriegel, H.; W. Schmahl, G. Kistner, and F.-E. Stieve, eds.). New York: Gustav Fischer, p. 145-173, 1982.
98. Calhoun, K.H., W.C. LeLievre, and M.J. Correia\*. Effects of Position Change on Optokinetic Nystagmus and Optokinetic After-nystagmus in Man. Otolaryngology - Head and Neck Surgery 91: 81-84, 1983.
99. Clegg, T., A.A. Perachio\*, and M.J. Correia\*. Tilt Responses of Semicircular Canal Primary Afferents. Otolaryngology - Head and Neck Surgery 90: 103-107, 1982.
100. Cohen, G.M., M. Reschke\*, and J. Homick\*. A Study in Motion Sickness - Saccular Hair Cells in the Adult Bullfrog. In: Making Space Work for Mankind; Proceedings of the 19th Space Congress, Cocoa Beach, FL, April 28-30, 1982. Cape Canaveral, FL: Canaveral Council of Technical Societies, p. 8-57 - 8-61, 1982.
101. Correia\*, M.J., A.R. Eden, K.N. Westlund, and J.D. Coulter. Organization of Ascending Auditory Pathways in the Pigeon (Columba livia) as Determined by Autoradiographic Methods. Brain Research 234: 205-212, 1982.
102. Cowings\*, P.S. and W.B. Toscano. The Relationship of Motion Sickness Susceptibility to Learned Autonomic Control for Symptom Suppression. Aviation, Space, and Environmental Medicine 53: 570-575, 1982.
103. Curthoys, I.S., R.H.I. Blanks, and C.H. Markham\*. Semicircular Canal Structure During Postnatal Development in Cat and Guinea Pig. Annals of Otology, Rhinology and Laryngology 91: 185-192, 1982.
104. Daunton\*, N. and G.M. Jones. Distribution of Sensitivity Vectors in Central Vestibular Units Responding to Linear Acceleration (Abstract). Society for Neuroscience Abstracts 8: 42, 1982.
105. Diamond, S.G., C.H. Markham\*, and N. Furuya. Binocular Counter-rolling During Sustained Body Tilt in Normal Humans and in a Patient with Unilateral Vestibular Nerve Section. Annals of Otology, Rhinology and Laryngology 91: 225-229, 1982.
106. Eden, A.R. and M.J. Correia\*. An Autoradiographic and HRP Study of Vestibulocollic Pathways in the Pigeon. Journal of Comparative Neurology 211: 432-440, 1982.

107. Eden, A.R. and M.J. Correia\*. Identification of Multiple Groups of Efferent Vestibular Neurons in the Adult Pigeon Using Horseradish Peroxidase and DAPI. Brain Research 248: 201-208, 1982.
108. Eden, A.R., M.J. Correia\*, and P.G. Steinkuller. Medullary Proprioceptive Neurons from Extraocular Muscles in the Pigeon Identified with Horseradish Peroxidase. Brain Research 237: 15-21, 1982.
109. Edley, S.M. and A.M. Graybiel\*. The Afferent and Efferent Connections of the Feline Nucleus Tegmenti Pedunculopontinus, Pars Compacta. Journal of Comparative Neurology 217: 187-215, 1983.
110. Fox\*, R.A. and N.G. Daunton\*. Conditioned Feeding Suppression in Rats Produced by Cross-Coupled and Simple Motions. Aviation, Space, and Environmental Medicine 53: 218-220, 1982.
111. Fox\*, R.A., N.G. Daunton\*, and J. Coleman. Susceptibility of the Squirrel Monkey to Several Different Motion Conditions (Abstract). Society for Neuroscience Abstracts 8: 698, 1982.
112. Goldberg\*, J.M. and C. Fernandez. Eye Movements and Vestibular-Nerve Responses Produced in the Squirrel Monkey by Rotations About an Earth-Horizontal Axis. Experimental Brain Research 46: 393-402, 1982.
113. Goldberg\*, J.M., C. Fernandez, and C.E. Smith. Responses of Vestibular-Nerve Afferents in the Squirrel Monkey to Externally Applied Galvanic Currents. Brain Research 252: 156-160, 1982.
114. Graybiel\*, A., D.B. Cramer\*, and C.D. Wood. Antimotion-Sickness Efficacy of Scopolamine 12 and 72 Hours After Transdermal Administration. Aviation, Space, and Environmental Medicine 53: 770-772, 1982.
115. Graybiel\*, A. and J.R. Lackner\*. Motion Sickness: Acquisition and Retention of Adaptation Effects Compared in Three Motion Environments. Aviation, Space, and Environmental Medicine 54: 307-311, 1983.
116. Graybiel\*, A.M. Correlative Studies of Histochemistry and Fiber Connections in the Central Nervous System. In: Cytochemical Methods in Neuroanatomy (Chan-Palay, V. and S.L. Palay, eds.). New York: Alan R. Liss, p. 45-67, 1982.
117. Graybiel\*, A.M. and R.P. Elde. Somatostatin-Like Immunoreactivity Characterizes Neurons of the Nucleus Reticularis Thalami in the Cat and Monkey. Journal of Neurosciences 3: 1308-1321, 1983.

118. Hatamian, M. and D.J. Anderson\*. Design Considerations for a Real-Time Ocular Counterroll Instrument. IEEE Transactions on Biomedical Engineering 30: 278-288, 1983.
119. Hatamian, M. and D.J. Anderson\*. Noise Tolerance of a Video Eye Position Detector (Abstract). IEEE Transactions of Biomedical Engineering 29: 605, 1982.
120. Hatamian, M. and D.J. Anderson\*. Noise Tolerance of a Video Eye Position Detector. In: Frontiers of Engineering in Health Care (Potvin, A.R. and Potvin, J.H., eds.). New York: Institute of Electrical and Electronic Engineers, p. 313-316, 1982.
121. Homick\*, J.L. Cabin Acoustical Noise. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 22, 1982. (NASA-TM-58245)
122. Homick\*, J.L. Validation of Predictive Tests and Countermeasures for Space Motion Sickness. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 8, 1982. (NASA-TM-58245)
123. Homick\*, J.L. Validation of Predictive Tests and Countermeasures for Space Motion Sickness. In: STS-3 Medical Report (Pool, S., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 8-10, 1982. (NASA-TM-58247)
124. Homick\*, J.L., J. Degioanni, M.R. Reschke\*, C.S. Leach\*, R.L. Kohl, and P.C. Ryan. An Evaluation of the Time Course of Efficacy of Transdermally Administered Scopolamine in the Prevention of Motion Sickness. In: Preprints of the 1982 Annual Scientific Meeting, Aerospace Medical Association, Bal Harbour, FL, May 10-13, 1982. Washington, D.C.: Aerospace Medical Association, p. 85-86, 1982.
125. Homick\*, J.L., M.F. Reschke\*, P.C. Ryan, C.E. Litton, C.L. Lacey, and J.T. Baker. Prediction of Susceptibility to Motion Sickness. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 166-167, 1983.
126. Igarashi\*, M., H. Isago, and B.R. Alford. Effects of Prolonged Optokinetic Stimulation on Oculomotor and Locomotor Balance Functions. Acta Otolaryngologica 95: 560-567, 1983.
127. Igarashi\*, M., H. Isago, J.L. Homick\*, and M.F. Reschke\*. Comparison of Vestibular Visual Stimuli Matching and Mismatching in the Squirrel Monkey. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 71-72, 1983.

128. Igarashi\*, M., H. Isago, T. O-Uchi, W.B. Kulecz, J.L. Homick\*, and M.F. Reschke\*. Vestibular-Visual Conflict Sickness in the Squirrel Monkey. Acta Otolaryngologica 95: 193-198, 1983.
129. Kenyon, R.V. and B.K. Lichtenberg.<sup>1</sup> Measurement of Ocular Counterrolling/OCR/by Polarized Light. In: Polarizers and Applications. Bellingham, WA: SPIE/International Society for Optical Engineering, p. 79-82, 1982.
130. Kevetter, G.A., W.R. Mehler\*, and W.D. Willis. Projections to the Thalamus from Brainstem Reticular Areas and Vestibular Nuclei in the Rat (Abstract). Society for Neuroscience Abstracts 8(Pt. 1): 699, 1982.
131. Kohl, R.L.<sup>2</sup> Neurochemical Background and Approaches in the Understanding of Motion Sickness. NASA, Johnson Space Center, Houston, TX, 53 p., July 1982. (NASA-CR-3569)
132. Kohl, R.L. and J.L. Homick\*. Motion Sickness: A Modulatory Role for the Central Cholinergic Nervous System. Neuroscience and Biobehavioral Reviews 7: 73-85, 1983.
133. Kohl, R.L., C. Leach\*, J.L. Homick\*, and F.T. LaRoche. Neuroendocrine Changes Associated with Motion Sickness Susceptibility. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 82-84, 1983.
134. Lackner\*, J.R. Alterations in Resolution of Linguistic Ambiguity After Cerebral Injury in Man. Perceptual and Motor Skills 54: 283-289, 1982.
135. Lackner\*, J.R. Alterations in Resolution of Temporal Order After Cerebral Injury in Man. Experimental Neurology 75: 501-509, 1982.
136. Lackner\*, J.R. and A. Graybiel\*. Perceived Orientation in Free-Fall Depends on Visual, Postural, and Architectural Factors. Aviation, Space, and Environmental Medicine 54: 47-51, 1983.
137. Lackner\*, J.R. and A. Graybiel\*. Rapid Perceptual Adaptation to High Gravito-inertial Force Levels: Evidence for Context-Specific Adaptation. Aviation, Space, and Environmental Medicine 53: 766-769, 1982.
138. Lackner\*, J.R. and S.R. Shattuck-Hufnagel. Alterations in Speech Shadowing Ability After Cerebral Injury in Man. Neuropsychologia 20: 709-714, 1982.

---

1. Young, L.R., Principal Investigator  
2. Homick, J.L., Principal Investigator

139. Lestienne, F., D. Whittington, and E. Bizzi\*. The Coordination of Eye-Head Movements in Alert Monkeys: Behavior of Eye-Related Neurons in the Brainstem. In: Spatially Oriented Behavior (Hein A. and M. Jeannerod, eds.). New York: Springer-Verlag, p. 105-118, 1983.
140. Lichtenberg, B.K., L.R. Young\*, and A.P. Arrott. Human Ocular Counterrolling Induced by Varying Linear Accelerations. Experimental Brain Research 48: 127-136, 1982.
141. Markham\*, C.H. and S.G. Diamond. Ocular Counterrolling as an Indicator of Otolith Dysfunction (Abstract). Neurology 32(4, Pt. 2): A145-A146, 1982.
142. Miller\*, A.D., P.S. Roossin, and R.H. Schor. Roll Tilt Reflexes After Vestibulospinal Tract Lesions. Experimental Brain Research 48: 107-112, 1982.
143. Miller\*, A.D., P.S. Roossin, R.H. Schor, and V.J. Wilson\*. Effect of Vestibulospinal Tract Lesions on Cat Neck and Forelimb Tilt Reflexes (Abstract). Society for Neuroscience Abstracts 8: 698, 1982.
144. Miller\*, A.D. and V.J. Wilson\*. 'Vomiting Center' Reanalyzed: An Electrical Stimulation Study. Brain Research 270: 154-158, 1983.
145. Money, K.E. and C.M. Oman\*. Medical Monitoring and Therapy of Space Motion Sickness. Paper Presented at the 33rd Congress of the International Astronautical Federation, Paris, France, September 27 - October 2, 1982, 7 p. (IAF-82-169)
146. Oertel, W.H., A.M. Graybiel\*, E. Mugnaini, R.P. Elde, D.E. Schmechel, and I.J. Kopin. Coexistence of Glutamic Acid Decarboxylase- and Somatostatin-Like Immunoreactivity in Neurons of the Feline Nucleus Reticularis Thalami. Journal of Neuroscience 3: 1322-1332, 1983.
147. Oman\*, C.M. A Heuristic Mathematical Model for the Dynamics of Sensory Conflict and Motion Sickness. Acta Oto-Laryngologica (Suppl. 392): 1-44, 1982.
148. Oman\*, C.M. Space Motion Sickness and Vestibular Experiments in Spacelab. Paper Presented at the 12th Intersociety Conference on Environmental Systems, San Diego, CA, July 19-21, 1982, 22 p. (SAE-Paper-82-0833)
149. Paige, G.D.1 Vestibuloocular Reflex and Its Interactions with Visual Following Mechanisms in the Squirrel Monkey. I. Response Characteristics in Normal Animals. Journal of Neurophysiology 49: 134-151, 1983.

---

1. Goldberg, J.M., Principal Investigator

150. Paige, G.D.<sup>1</sup> Vestibuloocular Reflex and Its Interactions with Visual Following Mechanisms in the Squirrel Monkey. II. Response Characteristics and Plasticity Following Unilateral Inactivation of Horizontal Canal. Journal of Neurophysiology 49: 152-168, 1983.
151. Parker\*, D.E., K.L. Parker, D.J. Lim\*, and H.E. von Gierke. Effects of Associated Reward or Punishment on Noise-Induced Cochlear Damage in the Guinea Pig (Abstract). Presented at the 5th Midwinter Research Meeting, Association for Research in Otolaryngology, St. Petersburg, FL, January 18-21, 1982.
152. Parker\*, D.E., O. Tjernstrom, A. Ivarsson, W.L. Gullledge, and R.L. Poston. Physiological and Behavioral Effects of Tilt-Induced Body Fluid Shifts. Aviation, Space, and Environmental Medicine 54: 402-409, 1983.
153. Ross, H.E. and M.F. Reschke\*. Mass Estimation and Discrimination During Brief Periods of Zero Gravity. Perception and Psychophysics 31: 429-436, 1982.
154. Rubertone, J.A., W.R. Mehler\*, and G.E. Cox. The Intrinsic Organization of the Vestibular Complex: Evidence for Internuclear Connectivity. Brain Research 263: 137-141, 1983.
155. Schor, R.H. and A.D. Miller\*. Relationship of Cat Vestibular Neurons to Otolith-Spinal Reflexes. Experimental Brain Research 47: 137-144, 1982.
156. Silver, M.R., M.B. Moller, F.O. Black\*, C. Wall, III, and J.B. Puschett. Effects of Furosemide (F) and Bumetanide (B) on Auditory and Vestibular Function in Normal Human Volunteers (Abstract). Kidney International 23: 135, 1983.
157. Tong, S.-L. and T.H. Bullock\*. The Sensory Functions of the Cerebellum of the Thornback Ray, Platyrrhinoidis triseriata. Journal of Comparative Physiology 148: 399-410, 1982.
158. Toscano, W.B. and P.S. Cowings\*. Reducing Motion Sickness: A Comparison of Autogenic-Feedback Training and an Alternative Cognitive Task. Aviation, Space, and Environmental Medicine 53: 449-453, 1982.
159. Trune, D.R. and D.J. Lim\*. Central Vestibular Changes in Otoconia-Deficient Pallid Mice (Abstract). Presented at the 5th Midwinter Research Meeting, Association for Research in Otolaryngology, St. Petersburg, FL, January 18-21, 1982.

---

1. J.M. Goldberg, Principal Investigator

160. Wall, C., III and F.O. Black\*. Postural Stability and Rotational Tests: Their Effectiveness for Screening Dizzy Patients. Acta Otolaryngologica 95: 235-246, 1983.
161. Werness, S.A.S. and D.J. Anderson\*. Parametric Analysis of Body Sway Responses to Filtered Pseudorandom Noise. Presented at the 5th Midwinter Research Meeting, Association for Research in Otolaryngology, St. Petersburg, FL, January 18-21, 1982.
162. Wicke, R.W. and C.M. Oman\*. Visual and Graviceptive Influences on Lower Leg EMG Activity in Humans During Brief Falls. Experimental Brain Research 46: 324-330, 1982.
163. Young\*, L.R. Human Orientation in Space. Paper Presented at the American Institute of Aeronautics and Astronautics 20th Aerospace Sciences Meeting, Orlando, FL, January 11-14, 1982, 10 p. (AIAA-PAPER-82-0422)



## Bone Loss

164. Altchuler\*, S.I. Dietary Protein and Calcium Loss; A Review. Nutrition Research 2: 193-200, 1982.
165. Baranowski, T.J., Jr., J. Black, and C.T. Brighton\*. Micro-environmental Changes Associated with Electrical Stimulation of Osteogenesis by Direct Current (Abstract). Journal of the Electrochemical Society 130: C120, 1983.
166. Barden, H.S., R.B. Mazess\*, R.W. Chesney, P.G. Rose, and R. Chun. Bone Status of Children Receiving Anticonvulsant Therapy. Metabolic Bone Disease and Related Research 4(1): 43-47, 1982.
167. Bessman, E.S., D.R. Carter\*, J.C. McCarthy, and W.H. Harris. Accuracy Enhancement of In-Vivo Bone Strain Measurements and Analysis. Journal of Biomechanical Engineering 104: 226-231, 1982.
168. Boyd, D.P., C.E. Cann, J.L. Couch, D.D. Faul, R.G. Gould, K.R. Peschmann, and H.K. Genant\*. Future Advanced CT Technology for Bone and Tissue Densitometry: Isotope Source and Electron Beam Scanners. Journal of Computer Assisted Tomography 6(1): 202, 1982.
169. Bunch\*, T.E., D.R. Young\*, and W.J. Niklowitz. Disuse Osteoporosis in the Monkey: Electron Probe Analysis of Cortical Bone (Abstract). Calcified Tissue International 34(Suppl. 1): S3, 1982.
170. Cann, C.E. and R.R. Adachi.<sup>1</sup> Bone Resorption and Mineral Excretion in Rats During Spaceflight. American Journal of Physiology 244: R327-R331, 1983.
171. Cann, C.E. and H.K. Genant\*. Cross-Sectional Studies of Vertebral Mineral Using Quantitative Computed Tomography. Journal of Computer Assisted Tomography 6(1): 216-218, 1982.
172. Cann, C.E., H.K. Genant\*, and F.O. Kolb. Male Idiopathic Osteoporosis: Patterns of Bone Loss May Indicate Heterogeneity (Abstract). Calcified Tissue International 34(Suppl. 1): S28, 1982.
173. Chen, T.L., C.M. Cone, E. Morey-Holton\*, and D. Feldman. Glucocorticoid Regulation of 1,25(OH)<sub>2</sub>-Vitamin D<sub>3</sub> Receptors in Cultured Mouse Bone Cells. Journal of Biological Chemistry 257: 13564-13569, 1982.

---

1. Genant, H.K., Principal Investigator

174. Chesney, R.W., A.J. Hamstra, and H.F. DeLuca\*. Absence of Seasonal Fluctuation in Serum Concentration of 24,25(OH)<sub>2</sub>-Vitamin D in Childhood. Calcified Tissue International 34: 527-530, 1982.
175. Chesney, R.W., A.J. Hamstra, R.B. Mazess\*, P. Rose, and H.F. DeLuca\*. Circulating Vitamin D Metabolite Concentrations in Childhood Renal Diseases. Kidney International 21: 65-69, 1982.
176. Chesney, R.W., R.B. Mazess\*, P. Rose, A.J. Hamstra, H.F. DeLuca\*, and A.L. Breed. Long-Term Influence of Calcitriol (1,25-Dihydroxyvitamin D) and Supplemental Phosphate in X-Linked Hypophosphatemic Rickets. Pediatrics 71: 559-567, 1983.
177. Faugere, M.C., H.H. Malluche, S. Okamoto, and H.F. DeLuca\*. 1,25(OH)<sub>2</sub>D<sub>3</sub> Reverses Bone Loss Due to Oophorectomy. Calcified Tissue International 35(Suppl.): A10, 1983.
178. Gallagher, J.C., C.M. Jerpbak, W.S.S. Jee, K.A. Johnson, H.F. DeLuca\*, and B.L. Riggs. 1,25-Dihydroxyvitamin D<sub>3</sub>: Short- and Long-Term Effects on Bone and Calcium Metabolism in Patients with Postmenopausal Osteoporosis. Proceedings of the National Academy of Sciences USA 79: 3325-3329, 1982.
179. Genant\*, H.K. Quantitative Computed Tomography for Assessing Metabolic Bone Diseases. In: Proceedings of the CT'82 Internationales Computertomographie Symposium (Lissner, J. and J.L. Doppman, eds.). Munich, Germany: Schnetztor-Verlag, p. 131-145, 1982.
180. Genant\*, H.K. and C.E. Cann. Quantitative Computed Tomography for Assessing Vertebral Bone Mineral. In: Computed Tomography of the Lumbar Spine (Genant, H.K., N. Chafetz, and C.A. Helms, eds.). San Francisco: University of California, p. 289-314, 1982.
181. Genant\*, H.K., C.E. Cann, and D.D. Faul. Quantitative Computed Tomography for Assessing Vertebral Bone Mineral. In: Non-Invasive Bone Measurements: Methodological Problems. (Dequeker, J. and C.C. Johnston, Jr., eds.). Eynsham, England: IRL Ltd., p. 215-255, 1983.
182. Gies, A.A. and D.R. Carter\*. Experimental Determination of Whole Long Bone Sectional Properties. Journal of Biomechanics 15: 297-303, 1982.
183. Grindeland\*, R.E. Space Weightlessness and Hormonal Changes in Human Subjects and Experimental Animals. In: Space Gerontology (Miquel, J. and A.C. Economos, eds.). Washington, D.C.: NASA, p. 55-57, 1982. (NASA-CP-2248)

184. Honma, Y., M. Hozumi, E. Abe, K. Konno, M. Fukushima, S. Hata, Y. Nishii, H.F. DeLuca\*, and T. Suda. 1-alpha, 25-Dihydroxyvitamin D<sub>3</sub> and 1 Alpha-Hydroxyvitamin D<sub>3</sub> Prolong Survival Time of Mice Inoculated with Myeloid Leukemia Cells. Proceedings of the National Academy of Sciences USA 80: 201-204, 1983.
185. LeBlanc\*, A.D., J.F. Lacy, P.C. Johnson\*, L.R. Poliner, and S.G. Jhingran. Tantalum-178 Count-Rate Limitations of Anger and Multicrystal Cameras. Radiology 146: 242-243, 1983.
186. LeBlanc\*, A.D., C. Marsh, and T. Driscoll. Skeletal Uptake of Tc-99m Labelled MDP in Rats Suspended to Simulate Spaceflight. In: Preprints of 1982 Annual Scientific Meeting, Aerospace Medical Association, Bal Harbour, FL, May 10-13, 1982. Washington, D.C.: Aerospace Medical Association, p. 198-199, 1982.
187. Lindgren, J.U. and H.F. DeLuca\*. Oral 1,25(OH)<sub>2</sub>D<sub>3</sub>: An Effective Prophylactic Treatment for Glucocorticoid Osteopenia in Rats. Calcified Tissue International 35: 107-110, 1983.
188. Lindgren, J.U., C.R. Merchant, and H.F. DeLuca\*. Effect of 1,25-Dihydroxyvitamin D<sub>3</sub> on Osteopenia Induced by Prednisolone in Adult Rats. Calcified Tissue International 34: 253-257, 1982.
189. Maheshwari, U.R., V.S. Schneider\*, J.T. McDonald, A.J. Brunetti, L. Leybin, E. Newbrun, and H. Hodge. Fluoride Balance Studies in Healthy Men During Bed Rest with and without a Fluoride Supplement. American Journal of Clinical Nutrition 36: 211-218, 1982.
190. Markowitz, M.E., J.F. Rosen, C. Smith, and H.F. DeLuca\*. 1,25-Dihydroxyvitamin D<sub>3</sub>-Treated Hypoparathyroidism: 35 Patient Years in 10 Children. Journal of Clinical Endocrinology and Metabolism 55: 727-733, 1982.
191. Mazess\*, R.B. Errors in Measuring Trabecular Bone by Computed Tomography Due to Marrow and Bone Composition. Calcified Tissue International 35: 148-152, 1983.
192. Mazess\*, R.B. On Aging Bone Loss. Clinical Orthopaedics and Related Research 165: 239-252, 1982.
193. Mazess\*, R.B. Spinal Mineral by 153-Gd Absorptiometry in Osteoporosis (Abstract). Calcified Tissue International 35(Suppl.): A60, 1983.
194. Mazess\*, R.B. The Noninvasive Measurement of Skeletal Mass. In: Bone and Mineral Research, Annual 1 (Peck, W.A., ed.). Princeton: Excerpta Medica, p. 223-279, 1983.
195. Mazess\*, R.B. and C. Christiansen. A Comparison of Bone Mineral Results from Denmark and the U.S. Human Biology 54: 343-354, 1982.

196. Mazess\*, R.B. and G.D. Whedon. Immobilization and Bone. Calcified Tissue International 35: 265-267, 1983.
197. Pahuja, D.N. and H.F. DeLuca\*. Thyroid Hormone and Vitamin D Metabolism in the Rat. Archives of Biochemistry and Biophysics 213: 293-298, 1982.
198. Pang, P.K.T., M.C.M. Yang, A.D. Kenny\*, and T.E. Tenner, Jr. Structure and Vascular Activity Relationship of Parathyroid Hormone and Some Hypotensive Peptides. Clinical and Experimental Hypertension 4: 189-199, 1982.
199. Patterson-Allen, P.E., P.X. Callahan\*, and D.R. Young\*. Identification of Osteocalcin in Urine, and Its Elevation in Primate Immobilization (Abstract). Calcified Tissue International 34:(Suppl. 1): S12, 1982.
200. Pozzi-Mucelli, R.S., A.S. Kanter, H.K. Genant\*, C.E. Cann, B. Ettingen, and F.O. Kolb. Quantitative Bone Mineral Analyses in Primary Hyperparathyroidism (Abstract). Calcified Tissue International 35(Suppl.): A43, 1983.
201. Price, P.A., M.K. Williamson, T. Haba, R.B. Dell, and W.S.S. Jee\*. Excessive Mineralization with Growth Plate Closure in Rats on Chronic Warfarin Treatment. Proceedings of the National Academy of Sciences USA 79: 7734-7738, 1982.
202. Rambaut\*, P.C. The Effects of Prolonged Bedrest on Bone and Muscle. In: A Critical Review of the U.S. and International Research on Effects of Bedrest on Major Body Systems (Nicogossian, A.E. and C.S. Lewis, eds.). Washington, D.C.: NASA, p. 105-117, 1982.
203. Silve, C.M., G.T. Hradek, A.L. Jones, and C.D. Arnaud\*. Parathyroid Hormone Receptor in Intact Embryonic Chicken Bone: Characterization and Cellular Localization. Journal of Cell Biology 94: 379-386, 1982.
204. Simon, L.S., D.M. Slovik, P.D. Wortman, R.M. Neer\*, and S. Krane. Parathyroid Hormone (PTH) Infusion Inhibits Type I Collagen Synthesis in Humans (Abstract). Clinical Research 30: 476A, 1982.
205. Simpson, R.U. and H.F. DeLuca\*. Purification of Chicken Intestinal Receptor for 1 Alpha, 25-Dihydroxyvitamin D<sub>3</sub> to Apparent Homogeneity. Proceedings of the National Academy of Sciences USA 79: 16-20, 1982.
206. Steinherz, R., R.W. Chesney, J.D. Schulman, H.F. DeLuca\* and M. Phelps. Circulating Vitamin D Metabolites in Nephropathic Cystinosis. Journal of Pediatrics 102: 592-594, 1983.

207. Stern, P.H., B.P. Halloran\*, H.F. DeLuca\*, and T.J. Hefley. Responsiveness of Vitamin D-Deficient Fetal Rat Limb Bones to Parathyroid Hormone in Culture. American Journal of Physiology 244: E421-E424, 1983.
208. Wang, T.M., W.S.S. Jee\*, L.A. Woodbury, and J.L. Matthews. Effects of Phytohemagglutinin-P (PHA-P) on Bone of the Growing Rat. Metabolic Bone Disease and Related Research 4: 193-199, 1982.
209. Young\*, D.R., W.J. Niklowitz, and C.R. Steele\*. Tibial Changes in Experimental Disuse Osteoporosis in the Monkey. Calcified Tissue International 35: 304-308, 1983.
210. Young\*, D.R. and R.S. Swenson. Metabolic Alkalosis During Immobilization in Monkeys (Abstract). Federation Proceedings 41: 1012, 1982.

## Muscle Alterations

211. Booth\*, F.W. Effect of Limb Immobilization on Skeletal Muscle. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 52: 1113-1118, 1982.
212. Booth\*, F.W., D.T. Butler, W.F. Nicholson, and P.A. Watson. Insulin Resistance for Protein Synthesis Does Not Occur in Muscles of Immobilized Rat Hindlimbs (Abstract). Medicine and Science in Sports and Exercise 14: 108, 1982.
213. Booth\*, F.W., W.F. Nicholson, and P.A. Watson. Influence of Muscle Use on Protein Synthesis and Degradation. In: Exercise and Sport Sciences Reviews, Vol. 10 (Terjung, R.L., ed.). Madison, WI: American College of Sports Medicine, p. 27-48, 1982.
214. Ellis\*, S. Stimulation of Body Weight Increase and Epiphyseal Cartilage Growth by Insulin Like Growth Factor. NASA, Ames Research Center, Moffet Field, CA, 15 p., September 1982. (NASA-TM-84285)
215. Fitts\*, R.H., J.B. Courtright, D.H. Kim, and F.A. Witzmann. Muscle Fatigue with Prolonged Exercise: Contractile and Biochemical Alterations. American Journal of Physiology 242: C65-C73, 1982.
216. Grindeland\*, R.E., W.C. Hymer, P. Lundgren, and C. Edwards. Differential Secretion of Bioassayable Growth Hormone by Two Types of Rat Somatotrophs (Abstract). Physiologist 25(4): 262, 1982.
217. Hoar, P.E. and W.G.L. Kerrick\*. Differentiation of Cat Muscle Fiber Types: Use of Skinned Fibers (Abstract). Biophysical Journal 37: 128a, 1982.
218. Kim, D.H. and R.H. Fitts\*. Phosphoprotein Formation in Sarcoplasmic Reticulum of Fast and Slow Skeletal Muscle--The Effect of Hindlimb Immobilization (Abstract). Federation Proceedings 41: 1595, 1982.
219. Kim, D.H., F.A. Witzmann, and R.H. Fitts\*. Effect of Disuse on Sarcoplasmic Reticulum in Fast and Slow Skeletal Muscle. American Journal of Physiology 243: C156-C160, 1982.
220. Max\*, S.R. and J. Toop. Androgens Enhance 2-Deoxyglucose Uptake by the Rat Levator Ani Muscle in Vivo (Abstract). Journal of Cell Biology 95: 358a, 1982.

221. Mayer, R.F. and S.R. Max\*. Denervation and Reinnervation of Skeletal Muscle. In: Myasthenia Gravis (Albuquerque, E.X. and A.T. Eldefrawi, eds.). New York: Chapman and Hall, p. 215-246, 1983.
222. Nicholson, W.F., P.O. Ikoya, P.A. Watson, and F.W. Booth\*. Insulin Sensitivity of Mouse Skeletal Muscle (Abstract). Federation Proceedings 41: 968, 1982.
223. Patterson-Allen, P., C.E. Brautigam, R.E. Grindeland\*, C.W. Asling, and P.X. Callahan. A Specific Radioimmunoassay for Osteocalcin with Advantageous Species Crossreactivity. Analytical Biochemistry 120: 1-7, 1982.
224. Popiela, H., S. Ellis\*, and B.W. Festoff. Dose-Dependent Initiation of Myogenesis by Neurotrophic Factor. Journal of Neuroscience Research 8: 547-567, 1982.
225. Riley\*, D.A., S. Ellis\*, and J. Bain. Carbonic Anhydrase Activity in Skeletal Muscle Fiber Types, Axons, Spindles, and Capillaries of Rat Soleus and Extensor Digitorum Longus Muscles. Journal of Histochemistry and Cytochemistry 30: 1275-1288, 1982.
226. Schaerf, F.W., T. Patz, and S.R. Max\*. Estrogen Modulates Neural Control of Muscle Glucose 6-Phosphate Dehydrogenase. Journal of Neurochemistry 38: 1765-1767, 1982.
227. Seider, M.J., W.F. Nicholson, and F.W. Booth\*. Insulin Resistance for Glucose Metabolism in Disused Soleus Muscle of Mice. American Journal of Physiology 242: E12-E18, 1982.
228. Troup, J.P. and R.H. Fitts\*. Membrane Properties of Skeletal Muscle Fiber Types Following Hindlimb Immobilization (Abstract). Federation Proceedings 41: 1595, 1982.
229. Unsworth, B.R., F.A. Witzmann, and R.H. Fitts\*. A Comparison of Rat Myosin from Fast and Slow Skeletal Muscle and the Effect of Disuse. Journal of Biological Chemistry 257: 15129-15136, 1982.
230. Witzmann, F.A., D.H. Kim, and R.H. Fitts\*. Effect of Hindlimb Immobilization on the Fatigability of Skeletal Muscle. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 1242-1248, 1983.
231. Witzmann, F.A., D.H. Kim, and R.H. Fitts\*. Hindlimb Immobilization: Length-Tension and Contractile Properties of Skeletal Muscle. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 53: 335-345, 1982.
232. Witzmann, F.A., D.H. Kim, and R.H. Fitts\*. Recovery Time Course in Contractile Function of Fast and Slow Skeletal Muscle After Hindlimb Immobilization. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 52: 677-682, 1982.

233. Witzmann, F.A., J.P. Troup, and R.H. Fitts\*. Acid Phosphatase and Protease Activities in Immobilized Rat Skeletal Muscles. Canadian Journal of Physiology and Pharmacology 60: 1732-1736, 1982.
234. Zeman, R.J., P.L. Bernstein, and J.D. Etlinger\*. Regulation of Atrophy and Twitch Kinetics in Rat Soleus Muscles in Organ Culture (Abstract). Federation Proceedings 42: 994, 1983.



## Blood Alterations

235. Dunn\*, C.D.R., D.J. Boden, and L.D. Wallace. Is the Stability of the Oxyhaemoglobin Dissociation Curve in Stored Blood a Function of the Way the Cells 'Pack'? Scandinavian Journal of Clinical and Laboratory Investigation 43: 179-183, 1983.
236. Dunn\*, C.D.R., L. Gibson, R. Pombier, and J. Dardano. Stomatocytosis in a Colony of Captive Squirrel Monkeys (Saimiri sciureus). Laboratory Animal Science 33: 308-310, 1983.
237. Dunn\*, C.D.R., P.C. Johnson\*, and C.S. Leach\*. Fluid Shifts and Erythropoiesis: Relevance to the "Anemia" of Spaceflight (Abstract). Physiologist 25(4): 196, 1982.
238. Dunn\*, C.D.R., P.C. Johnson\*, and C.S. Leach\*. Fluid Shifts and Erythropoiesis: Relevance to the "Anemia" of Spaceflight. Physiologist 25(6, Suppl.): S79-S80, 1982.
239. Dunn\*, C.D.R., R.D. Lange, S.L. Kimzey\*, P.C. Johnson\*, and C.S. Leach\*. Implications of the Etiology of the Anemia of Space Flight From a Study of Erythropoietin (Ep) Titers in Subjects Exposed to Prolonged Bedrest. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 208-209, 1983.
240. Dunn\*, C.D.R., R.D. Lange, S.L. Kimzey\*, P.C. Johnson\*, and C.S. Leach\*. Serum Erythropoietin (Ep) Titers in Subjects Exposed to Prolonged Horizontal or 6°-Head-Down Tilt Bedrest (Abstract). Experimental Hematology 10(Suppl. 11): 154, 1982.
241. George\*, J.N. and A.R. Onofre. Human Platelet Surface Binding of Endogenous Secreted Factor VIII-von Willebrand Factor and Platelet Factor 4. Blood 59: 194-197, 1982.
242. George\*, J.N., L.L. Thoi, L.M. McManus, and T.A. Reimann. Isolation of Human Platelet Membrane Microparticles from Plasma and Serum. Blood 60: 834-840, 1982.
243. Goldwater\*, D.J., D.B. O'Hara, and H. Sandler\*. Increased Hematuria Following Hypergravic Exposure in Middle-Aged Women. Physiologist 25(6, Suppl.): S167-S170, 1982.
244. Greenberg, S.D., S. Smith, P.R. Swank, D.G. Winkler, H.J. Spjut, R. Estrada, N. Hunter, and G.R. Taylor\*. Visual Cell Profiles for Quantitation of Premalignant Cells in Sputum: A Preliminary Report. Acta Cytologica 26: 809-813, 1982.
245. Greenberg, S.D., H.J. Spjut, D.G. Winkler, R.G. Estrada, P.C. Swank, N.R. Hunter, and G.R. Taylor\*. Search for Preneoplastic Cell Markers in Sputum (Abstract). Laboratory Investigation 46(1): 32A, 1982.

246. Hunter, N.R., G.R. Taylor\*, P.R. Swank, D.G. Winkler, H. Schares, S.D. Greenberg, H.J. Spjut, and R. Estrada. Development of Cell Relocation Capability for Automated Image Analysis (Abstract). American Journal of Clinical Pathology 78: 276, 1982.
247. Levine S.P., L.K. Knieriem, M.A. Harris, and J.N. George\*. Emotional Stress, Catecholamines (CATS), and Platelet Activation (Abstract). Circulation 66(Suppl. II): II-52, 1982.
248. McLatchie, C., D.L. Rosenthal, S.C. Suffin, B. White, and K.R. Castleman\*. Preliminary Study of Sputum Preparations for Computer Analysis (Abstract). Analytical and Quantitative Cytology 4: 152, 1982.
249. Rosenthal, D.L., C. McLatchie, E. Stern, B.S. White, and K.R. Castleman\*. Endocervical Columnar Cell Atypia Coincident with Cervical Neoplasia Characterized by Digital Image Analysis. Acta Cytologica 26: 115-120, 1982.
250. Rosenthal, D.L., S.D. Woods, J. Leibel, C. McLatchie, S. Suffin, K.R. Castleman\*, and B. White. Production of a More Enriched Cellular Specimen by Selective Filtration: Its Application to Image Analysis (Abstract). Analytical and Quantitative Cytology 4: 157, 1982.
251. Stern, E., D.L. Rosenthal, C. McLatchie, B.S. White, and K.R. Castleman\*. An Expanded Cervical Cell Classification System Validated by Automated Measurements. Analytical and Quantitative Cytology 4: 110-114, 1982.
252. Suarez, A.J., S.P. Levine, and J.N. George\*. Emotional Stress, Catecholamines and Platelet Activation (Abstract). Clinical Research 30: 331A, 1982.
253. Swank, P.R., S.D. Greenberg, J. Montavlo, N.R. Hunter, H.J. Spjut, R. Estrada, D.G. Winkler, and G.R. Taylor\*. Application of Visual Cell Profiles in the Study of Premalignant Atypias in Sputum. Acta Cytologica 26: 746-747, 1982.
254. Swank, P.R., S.D. Greenberg, D.G. Winkler, N.R. Hunter, S. Smith, H.J. Spjut, R. Estrada, and G.R. Taylor\*. Nuclear Segmentation of Bronchial Epithelial Cells by Minimax and Thresholding Techniques: A Comparison (Abstract). Analytical and Quantitative Cytology 4: 159-160, 1982.
255. Taylor\*, G.R. Hematological and Immunological Analysis. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.) NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 12-13, 1982. (NASA-TM-58245)

256. Taylor\*, G.R. Hematological and Immunological Analysis. In: STS-3 Medical Report (Pool, S., P.C. Johnson, and J.A. Mason, eds.) NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 15-16, 1982. 1982. (NASA-TM-58247)
257. Winkler, D.G., G.R. Taylor\*, N.R. Hunter, P.R. Swank, S.D. Greenberg, T.D. Rogers, S. Smith, P. Noble, H.J. Spjut, and R. Estrada. An Objective Description of the Morphology of Atypical Bronchial Epithelial Cells (Abstract). Analytical and Quantitative Cytology 4: 162, 1982.

## Fluid and Electrolyte Changes

258. Albers, H.E., R. Lydic, and M.C. Moore-Ede\*. Entrainment and Masking of Circadian Drinking Rhythms in Primates: Influence of Light Intensity. Physiology and Behavior 28: 205-211, 1982.
259. Carlson, W., R. Feldman, and E. Haber\*. Three Dimensional Structure of Renin and Implications for the Binding of Renin Inhibitors (Abstract). Circulation 66(Suppl. II): II-287, 1982.
260. Chernow, B., M. Ziegler, J. Coyle, D. Cruess, P. Hughes, T. Rainey, and C.R. Lake.<sup>1</sup> Beta-Adrenergic Mediation of Sympathetic Nervous System Activity (Abstract). Clinical Research 29(5): 819A, 1982.
261. Convertino, V.A.<sup>2</sup> Heart Rate and Sweat Rate Responses Associated with Exercise-Induced Hypervolemia. Medicine and Science in Sports and Exercise 15: 77-82, 1982.
262. Convertino, V.A., L.C. Keil\*, and J.E. Greenleaf\*. Fluid-Endocrine Shifts to Graded Workloads Following Exercise Training (Abstract). Medicine and Science in Sports and Exercise 14: 118, 1982.
263. Convertino, V.A., L.C. Keil\*, and J.E. Greenleaf\*. Plasma Volume, Renin and Vasopressin Responses to Graded Exercise After Training. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 508-514, 1983.
264. Czeisler, C.A., M.C. Moore-Ede\*, and R.M. Coleman. Rotating Shift Work Schedules That Disrupt Sleep Are Improved by Applying Circadian Principles. Science 217: 460-463, 1982.
265. De Leeuw, P.W., L.G. Meggs, and N.K. Hollenberg\*. Renal Vascular Tachyphylaxis to Angiotensin II: Specificity of the Response for Angiotensin. Life Sciences 30: 813-819, 1982.
266. Dickey, D.T., G.E. Billman, M.J. Keyl, D.A. Kem, L.C. Keil\*, H. Sandler\*, and H.L. Stone\*. Hormonal and Renal Responses to Plasma Volume Expansion After Horizontal Restraint in the Rhesus Monkey. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 100-101, 1983.
267. Dzau, V.J., S.L. Swartz, G.H. Williams, C. Malarick, N.K. Hollenberg\*, and L.S. Lilly. Dissociation of Renin-Angiotensin and Prostaglandin Systems During Captopril Therapy in Congestive Heart Failure (Abstract). Journal of the American College of Cardiology 1: 727, 1983.

---

1. Leach, C.S., Principal Investigator

2. Greenleaf, J.E., Principal Investigator

268. Epstein\*, M., D. Hoffman, and A.G. DeNunzio. Evidence for Operation of the Magnification Phenomenon in Patients with Chronic Renal Insufficiency. Mineral and Electrolyte Metabolism 9: 62-68, 1983.
269. Epstein\*, M., G. Johnson, and A.G. DeNunzio. Effects of Water Immersion on Plasma Catecholamines in Normal Humans. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 244-248, 1983.
270. Epstein\*, M., M. Lifschitz\*, and K. Rappaport. Augmentation of Prostaglandin Production by Linoleic Acid in Man (Abstract). Kidney International 21: 260, 1982.
271. Epstein\*, M., M. Ramachandran, and A.G. DeNunzio. Interrelationship of Renal Sodium and Phosphate Handling in Cirrhosis. Mineral and Electrolyte Metabolism 7: 305-315, 1982.
272. Epstein\*, M., R.E. Weitzman, S. Preston, and A.G. DeNunzio. Role of ADH as a Determinant of Impaired Water Excretion in Patients with Decompensated Cirrhosis (Abstract). Clinical Research 30: 539A, 1982.
273. Fadem, S.Z., G. Hernandez-Llamas, R.V. Patak, S.G. Rosenblatt, M.D. Lifschitz\*, and J.H. Stein. Studies on the Mechanism of Sodium Excretion During Drug-Induced Vasodilatation in the Dog. Journal of Clinical Investigation 69: 604-610, 1982.
274. Fregly, M.J.<sup>1</sup> Bethanechol-Induced Water Intake in Rats: Possible Mechanisms of Induction (Abstract). Federation Proceedings 41: 1368, 1982.
275. Fregly, M.J., D.C. Fater, and J.E. Greenleaf\*. Effect of the Angiotensin I Converting Enzyme Inhibitor, MK-421, on Experimentally Induced Drinking. Appetite: Journal for Intake Research 3: 309-319, 1982.
276. Fregly, M.J., D.C. Kikta, and J.E. Greenleaf\*. Bethanechol-Induced Water Intake in Rats: Possible Mechanisms of Induction. Pharmacology Biochemistry and Behavior 17: 727-732, 1982.
277. Fregly, M.J., N.E. Rowland, and J.E. Greenleaf\*. Effects of Yohimbine and Tolazoline on Isoproterenol and Angiotensin II-Induced Water Intake in Rats. Brain Research Bulletin 10: 121-126, 1983.
278. Ganong, W.F., J. Shinsako, I.A. Reid, L.C. Keil\*, D.L. Hoffman, and E.A. Zimmerman. Role of Vasopressin in the Renin and ACTH Responses to Intraventricular Angiotensin II. Annals of the New York Academy of Sciences 394: 619-624, 1982.

---

1. Greenleaf, J.E., Principal Investigator

279. Greenleaf\*, J.E. Bed-Rest Studies: Fluid and Electrolyte Responses. Paper Presented at the Space Physiology Conference, Toulouse, France March 1-4, 1983, 17 p. (NASA-TM-84357)
280. Greenleaf\*, J.E. Dehydration-Induced Drinking in Humans. Federation Proceedings 41: 2509-2514, 1982.
281. Greenleaf\*, J.E. Effect of Exercise on the Pseudodiabetes of Bed Rest. In: Space Gerontology (Miquel, J. and A.C. Economos, eds.). Washington, D.C.: NASA, p. 67-73, 1982. (NASA-CP-2248)
282. Greenleaf\*, J.E. The Body's Need for Fluids. In: Nutrition and Athletic Performance (Haskell, W., J. Scala, and J. Whittam, eds.). Palo Alto, CA: Bull Publishing, p. 34-50, 1982.
283. Greenleaf\*, J.E., P.J. Brock, L.C. Keil\*, and J.T. Morse. Drinking and Water Balance During Exercise and Heat Acclimation. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 54: 414-419, 1983.
284. Greenleaf\*, J.E. and M.J. Fregly. Dehydration-Induced Drinking: Peripheral and Central Aspects. Federation Proceedings 41: 2507-2508, 1982.
285. Greenleaf\*, J.E. and S. Kozlowski. Physiological Consequences of Reduced Physical Activity During Bed Rest. In: Exercise and Sport Sciences Reviews, Vol. 10 (Terjung, R.L., ed.). Philadelphia: Franklin Institute, p. 84-119, 1982.
286. Greenleaf\*, J.E. and S. Kozlowski. Reduction in Peak Oxygen Uptake After Prolonged Bed Rest. Medicine and Science in Sports and Exercise 14: 477-480, 1982.
287. Greenleaf\*, J.E., B. Kruk, H. Kaciuba-Uscilko, K. Nazar, and S. Kozlowski. Hypothalamic, Rectal, and Muscle Temperatures in Exercising Dogs: Effect of Cooling (Abstract). Medicine and Science in Sports and Exercise 14: 126, 1982.
288. Greenleaf\*, J.E., J.T. Morse, P.R. Barnes, J. Silver, and L. Keil\*. Hypervolemia and Plasma Vasopressin Suppression During Water Immersion in Man (Abstract). Federation Proceedings 41: 1750, 1982.
289. Greenleaf\*, J.E., L. Silverstein, J. Bliss, V. Langenheim, H. Rossow, and C. Chao. Physiological Responses to Prolonged Bed Rest and Fluid Immersion in Man: A Compendium of Research (1974-1980). NASA, Ames Research Center, Moffett Field, CA, 110 p., January 1982.
290. Haber\*, E.. Immunological Probes in Cardiovascular Disease. British Heart Journal 47: 1-10, 1982.
291. Heybach, J.P. and J. Vernikos\*. ACTH-Like Peptides Produce Hyperalgesia and Antagonize Morphine Hypoalgesia (Abstract). The Endocrine Society - Program and Abstracts 64: 371, 1982.

292. Hollenberg\*, N.K. Converting Enzyme Inhibition: Implications for Renal Perfusion and Function. Clinical and Experimental Pharmacology and Physiology (Suppl. 7): 73-79, 1982.
293. Hollenberg\*, N.K. Renal Response to Angiotensin-Converting Enzyme Inhibition. American Journal of Cardiology 49: 1425-1429, 1982.
294. Hollenberg\*, N.K. Surfeit, Deficit, and the Set Point for Sodium Homeostasis. Kidney International 21: 883-884, 1982.
295. Hollenberg\*, N.K. and D.R. Passan. Specificity of Renal Vaso-dilation with Captopril: Sapalasin Prevents the Response in the DOCA-Treated, Salt-Loaded Rabbit. Life Sciences 31: 329-334, 1982.
296. Hung, J., D. Goldwater\*, V.A. Convertino, J.H. McKillop, M.L. Goris, and R.F. DeBusk. Mechanisms for Decreased Exercise Capacity After Bed Rest in Normal Middle-Aged Men. American Journal of Cardiology 51: 344-348, 1983.
297. Ikemoto, F., E. Haber\*, and V.J. Dzau. Partial Purification of Canine High Molecular Weight Renin Using Immunoaffinity Chromatography (Abstract). Federation Proceedings 41: 1661, 1982.
298. Jerome, M.L., Y.R. Barbella, J. Wurpel, L.C. Keil\*, and W.B. Severs\*. Eating, Drinking and Urine Output After Prolonged Cerebroventricular Vasopressin Infusions in Rats. Pharmacology 26: 79-84, 1983.
299. Juhos, L.T., H.L. Young, and J.E. Greenleaf\*. Total LDH Activity and Its Isoenzyme Patterns During Bed Rest with Exercise Training (Abstract). Physiologist 25(4): 305, 1982.
300. Kapsha, J.M., L.C. Keil\*, and W.B. Severs\*.  $[Na^+]$  of Lateral Ventricular Cerebrospinal Fluid in Conscious Rabbits Before and After Osmotic and Hypovolemic Stimuli. Experimental Neurology 75: 332-346, 1982.
301. Kass, D.A. and M.C. Moore-Ede\*. Renal Responses to Prolonged Central Volume Expansion in Conscious Primates. American Journal of Physiology 242: F649-F656, 1982.
302. Katzberg, R.W., G. Schulman, L.G. Meggs, W.J.H. Caldicott, M.M. Damiano, and N.K. Hollenberg\*. Mechanism of the Renal Response to Contrast Medium in Dogs: Decrease in Renal Function Due to Hypertonicity. Investigative Radiology 18: 74-80, 1983.
303. Keller-Wood, M.E., C.E. Wade, J. Shinsako, L.C. Keil\*, D.J. Ramsay, and M.F. Dallman. ACTH, Vasopressin (AVP) and Hematocrit (HCT) Responses to Hypoglycemia During Carotid Glucose Infusion (Abstract). Federation Proceedings 41: 1110, 1982.

304. Kravik, S.E., J.E. Greenleaf\*, G. Geelen, L.C. Keil\*, C.E. Wade, P. Barnes, W.A. Spaul, and C.A. Elder. Use of the Anti-G-Suit for Studying Fluid Shifts and Hormonal Changes In Humans. In: Preprints of the 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 235, 1983.
305. Kravik, S.E., L.C. Keil\*, J.E. Silver, N. Wong, W.A. Spaul, and J.E. Greenleaf\*. Lack of Influence of Vasopressin on Immersion Diuresis in Men and Women (Abstract). Physiologist 25(4): 300, 1982.
306. LaRochelle, F., C. Leach\*, and J. Danellis\*. Effects of Age and Sex on Hormonal Responses to Weightlessness Simulation (Abstract). Physiologist 25(4): 304, 1982.
307. LaRochelle, F., C. Leach\*, and J. Vernikos-Danellis\*. Effects of Age and Sex on Hormonal Responses to Weightlessness Simulation. Physiologist 25(6, Suppl.): S161-S162, 1982.
308. LaRochelle, F.T., Jr., C.S. Leach\*, J.L. Homick\*, and R.L. Kohl. Endocrine Changes During Motion Sickness: Effects of Drug Therapy. In: Preprints of 1982 Annual Scientific Meeting, Aerospace Medical Association, Bal Harbour, FL, May 10-13, 1982. Washington, D.C.: Aerospace Medical Association, p. 87-88, 1982.
309. Leach\*, C.S. Biochemistry and Endocrinology. In: STS-2 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 10-11, 1982. (NASA-TM-58245)
310. Leach\*, C.S. Biochemistry and Endocrinology Results. In: STS-3 Medical Report (Pool, S.L., P.C. Johnson, and J.A. Mason, eds.). NASA, Lyndon B. Johnson Space Center, Houston, TX, p. 12-14, 1982. (NASA-TM-58247)
311. Leach\*, C.S. Metabolic and Endocrine Studies. In: A Critical Review of the U.S. and International Research on Effects of Bedrest on Major Body Systems (Nicogossian, A.E. and C.S. Lewis, eds.). Washington, D.C.: NASA, p. 81-94, 1982.
312. Leach\*, C.S. Metabolic Experiments on Spacelab-4. Paper Presented at the 12th Intersociety Conference on Environmental Systems, San Diego, CA, July 19-21, 1982, 5 p. (SAE-Paper-82-0831)
313. Leonard, J.I. and C.S. Leach\*. Analysis of Head-Down Tilt Response Using a Mathematical Model. In: Preprints of the 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 233-234, 1983.



314. Lifschitz\*, M.D. LLC-PK<sub>1</sub> Cells Derived from Pig Kidneys Have a Defect in Cyclooxygenase. Journal of Biological Chemistry 257: 12611-12615, 1982.
315. Lifschitz\*, M.D. Prostaglandins in Liver Disease. In: The Kidney in Liver Disease, 2nd Edition (Epstein, M., ed.). New York: Elsevier Biomedical, p. 421-468, 1983.
316. Lifschitz\*, M.D. Prostaglandins May Mediate the Chloride Concentration Gradient Across Domes from MDCK Cells (Abstract). Kidney International 21: 281, 1982.
317. Loutzenhiser, R., C. Horton, and M. Epstein\*. Calcium Entry Blocker Nisoldipine Preferentially Augments Glomerular Filtration Rate (GFR) in the Vasoconstricted Isolated Perfused Rat Kidney (Abstract). Kidney International 23: 246, 1983.
318. Lydic, R., H.E. Albers, B. Tepper, and M.C. Moore-Ede\*. Three-Dimensional Structure of the Mammalian Suprachiasmatic Nuclei: A Comparative Study of Five Species. Journal of Comparative Neurology 204: 225-237, 1982.
319. Maggio, W.W., Y.R. Barbella, L.C. Keil\*, and W.B. Severs\*. Effect of CSF Dilution on the Blood Pressure of Rats with Renal Hypertension. Pharmacology 25: 222-226, 1982.
320. Mangiapane, M.L., T.N. Thrasher, L.C. Keil\*, J.B. Simpson and W.F. Ganong. Deficits in Drinking and Vasopressin Secretion After Lesions of the Nucleus Medianus. Neuroendocrinology 37: 73-77, 1983.
321. Meggs, L.G., R.W. Katzberg, P.W. DeLeeuw, and N.K. Hollenberg\*. Evidence for Bradykinin (BK) as an Independent Modulator of Angiotensin II (AII) in the Renal Vasculature (Abstract). Kidney International 21: 262, 1982.
322. Moore-Ede\*, M.C., S.E. Churchill, C.S. Leach\*, F.M. Sulzman\*, C.A. Fuller\*, and D. Kass. Fluid and Electrolyte Homeostasis in Space - A Primate Model to Look at Mechanisms. Paper Presented at the 12th Intersociety Conference on Environmental Systems, San Diego, CA, July 19-21, 1982, 4 p. (SAE-Paper-82- 0832)
323. Moore-Ede\*, M.C., F.M. Sulzman\*, and C.A. Fuller\*. The Clocks That Time Us: Physiology of the Circadian Timing System. Cambridge, MA: Harvard University, 448 p., 1982.
324. Raff, H., J. Shinsako, L.C. Keil\*, and M.F. Dallman. Vasopressin, ACTH, and Corticosteroids During Hypercapnia and Graded Hypoxia in Dogs. American Journal of Physiology 244: E453-E458, 1983.

325. Re, R., D. Fintel, S. Bryan, E. Haber\*, R. Labiche, and M. Parab. Studies on Two Novel Angiotensin II Actions. Clinical and Experimental Hypertension A4: 1649-1660, 1982.
326. Reid, I.A., V.L. Brooks, C.D. Rudolph, and L.C. Keil\*. Analysis of the Actions of Angiotensin on the Central Nervous System of Conscious Dogs. American Journal of Physiology 243:R82-R91, 1982.
327. Schulman, G., R.W. Katzberg, and N.K. Hollenberg\*. Systemic vs. Intrarenal Factors in Angiotensin-Induced Paradoxical Natriuresis (PN) (Abstract). Kidney International 21: 266, 1982.
328. Schwartz, J., L.C. Keil\*, J. Maselli, and I.A. Reid. Role of Vasopressin in Blood Pressure Regulation During Adrenal Insufficiency. Endocrinology 112: 234-237, 1983.
329. Severs\*, W.B., J.Y. Summy-Long, and L.C. Keil\*. Contribution of Vasopressin and Renal Nerves to the Natriuresis Evoked by Centrally Administered Renin or Angiotensin. Experimental Brain Research (Suppl. 4): 324-334, 1982.
330. Severs\*, W.B., J.Y. Summy-Long, and L.C. Keil\*. The Brain Renin-Angiotensin System. Drug Development Research 2: 231-239, 1982.
331. Sondeen, J.L., L.C. Keil\*, and D.J. Ramsay. Hemodynamic and Hormonal Responses to Hemorrhage (Abstract). Federation Proceedings 41: 1269, 1982.
332. Sondeen, J.L., L.C. Keil\*, and D.J. Ramsay. Vasopressin, Angiotensin, and the Sympathetic Nervous System in the Maintenance of Blood Pressure During Hemorrhage in Conscious Dogs (Abstract). Federation Proceedings 42: 981, 1983.
333. Spaul, W.A., S.E. Kravik, N. Wong, C.A. Elder, and J.E. Greenleaf\*. Exercise Thermoregulation After Water Immersion Deconditioning (Abstract). Physiologist 25(4): 202, 1982.
334. Starr, J.C., J.E. Greenleaf\*, W. Van Beaumont, and V.A. Convertino. Handgrip and General Muscular Strength and Endurance During Prolonged Bed Rest with Isometric and Isotonic Leg Exercise Training (Abstract). Physiologist 25(4): 304, 1982.
335. Thrasher, T.N., L.C. Keil\*, and D.J. Ramsay. Angiotensin II (AII) Is Important in Blood Pressure Homeostasis But Not Drinking and Secretion of Arginine Vasopressin (AVP) Caused by an Acute Reduction in Venous Return in the Dog (Abstract). Federation Proceedings 41: 1104, 1982.
336. Thrasher, T.N., L.C. Keil\*, and D.J. Ramsay. Hemodynamic, Hormonal, and Drinking Responses to Reduced Venous Return in the Dog. American Journal of Physiology 243: R354-R362, 1982.

337. Thrasher, T.N., L.C. Keil\*, and D.J. Ramsay. Lesions of the Organum Vasculosum of the Lamina Terminalis (OVLt) Attenuate Osmotically-Induced Drinking and Vasopressin Secretion in the Dog. Endocrinology 110: 1837-1839, 1982.
338. Vernikos\*, J., M.F. Dallman, C. Bonner, A. Katzen, and J. Shinsako. Pituitary-Adrenal Function in Rats Chronically Exposed to Cold. Endocrinology 110: 413-420, 1982.
339. Wade, C.E., P. Bie, L.C. Keil\*, and D.J. Ramsay. Effect of Hypertonic Intracarotid Infusions on Plasma Vasopressin Concentration. American Journal of Physiology 243: E522-E526, 1982.
340. Wade, C.E., P. Bie, L.C. Keil\*, and D.J. Ramsay. Osmotic Control of Plasma Vasopressin in the Dog. American Journal of Physiology 243: E287-E292, 1982.
341. Wade, C.E., L.C. Keil\*, and D.J. Ramsay. Potentiation of the Osmotic Reactivity of Vasopressin Release During Sodium Depletion and Intravenous Angiotensin II (Abstract). Federation Proceedings 41: 1367, 1982.
342. Wilkes, B.M. and N.K. Hollenberg\*. Saline- and Glycerol-Induced Acute Renal Failure: 'Protection' Occurs After Insult. Nephron 30: 352-356, 1982.
343. Wong, N., J.E. Silver, S. Greenawalt, S.E. Kravik, G. Geelen, P.R. Barnes, and J.E. Greenleaf\*. Effect of Arm Exercise on Venous Blood Constituents During Leg Exercise (Abstract). Physiologist 25(4): 199, 1982.
344. Wood, C.E., L.C. Keil\*, and A.M. Rudolph. Arterial Pressure and Vasopressin (AVP) Secretion in Lambs (Abstract). Federation Proceedings 42: 1117, 1983.
345. Wood, C.E., L.C. Keil\*, and A.M. Rudolph. Hormonal and Hemodynamic Responses to Vena Caval Obstruction in Fetal Sheep. American Journal of Physiology 243: E278-E286, 1982.
346. Wood, C.E., J. Shinsako, L.C. Keil\*, and M.F. Dallman. Adrenal Sensitivity to Adrenocorticotropin in Normovolemic and Hypovolemic Conscious Dogs. Endocrinology 110: 1422-1429, 1982.
347. Wood, C.E., J. Shinsako, L.C. Keil\*, D.J. Ramsay, and M.F. Dallman. Apparent Dissociation of Adrenocorticotropin and Corticosteroid Responses to 15 ml/kg Hemorrhage in Conscious Dogs. Endocrinology 110: 1416-1421, 1982.
348. Wurpel, J.N.D., R.L. Dundore, Y. Barbella, L.C. Keil\*, and W.B. Severs\*. Barrel-Rolling After Intracerebroventricular (IVT) Arginine Vasopressin (VP) (Abstract). Federation Proceedings 42: 363, 1983.

349. Zusman, R., D. Christensen, J. Burton, J. Nussberger, A. Dodds, and E. Haber\*. Hemodynamic Effects of a Competitive Renin Inhibitory Peptide in Man: Evidence for Multiple Mechanisms of Action (Abstract). Clinical Research 31: 538A, 1983.

## Radiation Effects and Protection

350. Ainsworth\*, E.J. Radiation Carcinogenesis - Perspectives. In: Probability Models and Cancer (Le Cam, L. and J. Neyman, eds.). New York: North-Holland, p. 99-169, 1982.
351. Anton-Erxleben, F.H., J. Miquel\*, and D.E. Philpott\*. Fine Structural Changes in the Midgut of Old Drosophila melanogaster. In: Electron Microscopy 1982: Vol 3 - Biology (International Congress on Electron Microscopy Organizing Committee, ed.). Frankfurt, Germany: Deutsche Gesellschaft fuer Elektronenmikroskopie, p. 640-641, 1982.
352. Benton\*, E.V., R.P. Henke, and S.B. Curtis. Radiation Exposures During Spaceflight and Their Measurement (Abstract). In: Abstracts, 24th COSPAR Meeting, Ottawa, Canada, May 16-June 2, 1982. Paris: COSPAR, p. 325, 1982.
353. Bergtold, D.S. and J.T. Lett\*. Age-Related Changes in the Structure of DNA from Rabbit Photoreceptor Cells (Abstract). Age 5: 132, 1982.
354. Bidasaria, H.B. and L.W. Townsend\*. Analytic Optical Potentials for Nucleon-Nucleus and Nucleus-Nucleus Collisions Involving Light and Medium Nuclei. NASA, Langley Research Center, Hampton, VA, 20 p. January 1982. (NASA-TM-83224)
355. Bidasaria, H.B. and L.W. Townsend\*. Phenomenological Optical Potential Analysis of Proton-Carbon Elastic Scattering at 200 MeV. NASA, Langley Research Center, Hampton, VA, 20 p., June 1982. (NASA-TM-84498)
356. Bidasaria, H.B., L.W. Townsend\*, and J.W. Wilson\*. Complex WKB Analyses of Carbon-Carbon Rainbow Scattering. Bulletin of the American Physical Society 28: 658, 1983.
357. Bidasaria, H.B., L.W. Townsend\*, and J.W. Wilson\*. Theory of Carbon-Carbon Scattering from 200 to 290 MeV. Journal of Physics G: Nuclear Physics 9: L17-L20, 1983.
358. Cox, A.B., P.C. Keng, A.C. Lee, and J.T. Lett\*. Effects of Heavy Ions on Rabbit Tissues: Damage to the Forebrain. International Journal of Radiation Biology 42: 355-367, 1982.
359. Cox, A.B., J.T. Lett\*, E.J. Ainsworth, and J.G. Jose. Somatic Effects of High-LET Radiation and the Casarett Model (Abstract). In: Abstracts, 24th COSPAR Meeting, Ottawa, Canada, May 16-June 2, 1982. Paris: COSPAR, p. 326, 1982.

360. D'Amelio, F.E., L.M. Kraft\*, E.V. Benton\*, and J. Miquel\*. An Electron-Microscopic Study of the Brain of the Fruit Fly, Drosophila melanogaster, Exposed to High-LET Krypton ( $^{84}\text{Kr}$ ) Particle Radiation. Acta Neuropathologica 57: 37-44, 1982.
361. Economos, A.C., R.C. Ballard, J. Miquel\* and K.A. Lindseth. Increased Rate of Living and Rate of Aging of Rats Exposed to Hypergravity (Abstract). Age 5: 143, 1982.
362. Economos, A.C., J. Miquel\*, R.C. Ballard, M. Blunden, K.A. Lindseth, J. Fleming, D.E. Philpott\* and J. Oyama\*. Effects of Simulated Increased Gravity on the Rate of Aging of Rats: Implications for the Rate of Living Theory of Aging. Archives of Gerontology and Geriatrics 7: 349-363, 1982.
363. Kamaratos, E., C.K. Chang, J.W. Wilson\*, and Y.J. Xu. Valence Bond Effects on Mean Excitation Energies for Stopping Power in Metals. Physics Letters 92A: 363-365, 1982.
364. Keng, P.C., D.S. Bergtold, and J.T. Lett\*. Effects of Heavy Ions on Rabbit Tissues: Analysis of Low Levels of DNA Damage in Retinal Photoreceptor Cells. International Journal of Radiation Biology 43: 219-229, 1983.
365. Keng, P.C., A.C. Lee, A.B. Cox, D.S. Bergtold, and J.T. Lett\*. Effects of Heavy Ions on Rabbit Tissues: Cataractogenesis. International Journal of Radiation Biology 41(2): 127-137, 1982.
366. Khandelwal, G.S.<sup>1</sup> Stopping Power of K and L Electrons. Physical Review A 5: 2983-2986, 1982.
367. Kraft\*, L.M., E.D. D'Amelio, and F.E. D'Amelio. Morphological Evidence for Natural Poxvirus Infection in Rats. Laboratory Animal Science 32: 648-654, 1982.
368. Kraft\*, L.M., E.D. D'Amelio, and F.E. D'Amelio. A Natural Poxvirus Infection of Rats: Morphological Evidence in Spaceflight Experimental Animals (Abstract). Laboratory Animal Science 32: 414, 1982.
369. Kraft\*, L.M., K. Joyce, and E.D. D'Amelio. Removal of Histological Sections from Glass for Electron Microscopy: Use of Quetol 651 Resin and Heat. Stain Technology 58: 41-43, 1983.
370. Miquel\*, J. Comparison Between the Weightlessness Syndrome and Aging. In: Space Gerontology (Miquel, J. and A.C. Economos, eds.). Washington, D.C.: NASA, p. 1-7, 1982. (NASA-CP-2248)

---

1. Townsend, L.W., Principal Investigator

371. Miquel\*, J. and A.C. Economos (eds.). Space Gerontology, Proceedings of a Workshop, NASA Ames Research Center, Moffett Field, Ca, January 30-31, 1978. Washington: D.C.: NASA, 135 p., November 1982. (NASA-CP-2248)
372. Miquel\*, J., J.E. Johnson, Jr., and J. Cervos-Navarro. Comparison of CNS Aging in Humans and Experimental Animals. In: Brain Aging Neuropathology and Neuropharmacology (Cervos-Navarro, J. and H.-I. Sarkander, eds.). New York: Raven, p. 231-250, 1983. (Aging, Vol. 21)
373. Philpott\*, D.E., W. Sapp, C. Williams, J. Stevenson, S. Black, R. Corbett, and J. Miquel\*. The Response of Testes Cells to Low Level, Single Dose Helium Particle Irradiation. In: Proceedings of the 40th Annual Meeting of the Electron Microscopy Society of America, Washington, D.C., August 9-13, 1982. (Bailey, G.W., ed.). Baton Rouge, LA: Claitor's Publishing Division, p. 252-253, 1982.
374. Sacher\*, G. Energy Metabolism and Lifespan. In: Space Gerontology (Miquel, J. and A.C Economos, eds.). Washington, D.C.: NASA, p. 81-84, 1982. (NASA-CP-2248)
375. Townsend\*, L.W. Abrasion Cross Sections for  $^{20}\text{Ne}$  Projectiles at 2.1 GeV/Nucleon. Canadian Journal of Physics 61: 93-98, 1983.
376. Townsend\*, L.W. Harmonic Well Matter Densities and Pauli Correlation Effects in Heavy-Ion Collisions. NASA, Langley Research Center, Hampton, VA, 2 p., April 1982. (NASA-TP-2003)
377. Townsend\*, L.W. and H.B. Bidasaria. Analytic Determinations of Single-Folding Optical Potentials (Abstract). Bulletin of the American Physical Society 28: 659, 1983.
378. Townsend\*, L.W. and H.B. Bidasaria. Analytic Determinations of Single-Folding Optical Potentials. NASA, Langley Research Center, Hampton, VA, 14 p., February 1983. (NASA-TM-84611)
379. Townsend\*, L.W. and H.B. Bidasaria. Improvements to the Langley HZE Abrasion Model. NASA, Langley Research Center, Hampton, VA, 20 p., September 1982. (NASA-TM-84542)
380. Townsend\*, L.W. and J.W. Wilson\*. Comment of "Nucleus-Nucleus" Total Reaction Cross Sections". Physical Review C 25: 1679-1681, 1982.
381. Townsend\*, L.W., J.W. Wilson\*, and H.B. Bidasaria. Heavy-Ion Total and Absorption Cross Sections Above 25 MeV/Nucleon. NASA, Langley Research Center, Hampton, VA, 44 p., April 1983. (NASA-TP-2138)

382. Townsend\*, L.W., J.W. Wilson\*, and H.B Bidasaria. On the Geometric Nature of High Energy Nucleus-Nucleus Reaction Cross Sections. Canadian Journal of Physics 60: 1514-1518, 1982.
383. Wilson\*, J.W. Space Radiation Interaction Mechanisms in Materials. Paper Presented at the 21st Aerospace Sciences Meeting, Reno, NV, January 10-14, 1983, 7 p. (AIAA-No. 83-0588)
384. Wilson\*, J.W., C.K. Chang, Y.J. Xu, and E. Kamaratos. Ionic Bond Effects on the Mean Excitation Energy for Stopping Power. Journal of Applied Physics 53: 828-830, 1982.
385. Wilson\*, J.W. and Y.J. Xu. Metallic Bond Effects on Mean Excitation Energies for Stopping Powers. Physics Letters 90A: 253-255, 1982.
386. Yang, T.C.-H. and C.A. Tobias.<sup>1</sup> Studies on the Survival Frequencies of Irradiated Mammalian Cells with and without Cancer Cell Morphology. In: Probability Models and Cancer (LeCam, L. and J. Neyman, eds.). New York: North-Holland, p. 189-210, 1982.

---

1. Benton, E.V., Principal Investigator



## Human Behavior and Performance

387. Brady\*, J.V. Human Behavior in Space Environments: A Research Agenda. Baltimore, MD: John Hopkins University, 34 p., 1983.
388. Edgar, D.M., D.C. Holley, N.L. Kerst, C.W. DeRoshia, and C.M. Winget\*. Circadian Rhythm Phase Dissociation Following Light-Dark Cycle Inversion in the Rat (Abstract). Federation Proceedings 41: 1697, 1982.
389. Emurian, H.H., C.S. Emurian, and J.V. Brady\*. Appetitive and Aversive Reinforcement Schedule Effects on Behavior: A Systematic Replication. Basic and Applied Social Psychology 3(1): 39-52, 1982.
390. Helmreich\*, R.L. Applying Psychology in Outer Space: Unfulfilled Promises Revisited. American Physiologist 38: 445-450, 1983.
391. Lehnert, H., F. Lombardi, R.L. Verrier, B. Lown, and R.J. Wurtman\*. Suppression of Cardio-Cardiac Sympathetic Reflexes During Myocardial Ischemia by Increasing Central Serotonergic Neurotransmission (Abstract). Journal of the American College of Chemistry 1: 696, 1983.
392. Lehnert, H., D.K. Reinstein, N.A. Scott, and R.J. Wurtman\*. Tyrosine Prevents Tailshock-Induced Norepinephrine Depletion in the Locus Coeruleus (LC) and Behavioral Depression in Rats (Abstract). Federation Proceedings 42: 770, 1983.
393. Lieberman, H.R., S. Corkin, B.J. Spring, J.H. Growdon, and R.J. Wurtman\*. Mood, Performance, and Pain Sensitivity: Changes Induced by Food Constituents. In: Research Strategies for Assessing the Behavioral Effects of Foods and Nutrients, Proceedings of a Conference at MIT, Cambridge, MA, November 9, 1982. Cambridge, MA: MIT, p. 69-93, 1982.
394. Lieberman, H.R., S. Corkin, B.J. Spring, J.H. Growdon, and R.J. Wurtman\*. Mood and Sensorimotor Performance After Neurotransmitter Precursor Administration (Abstract). Society for Neuroscience Abstracts 8: 395, 1982.
395. Lynch, H.J., R.J. Wurtman\*, and P. Ronsheim. Activity and Melatonin Rhythms Among Rats with Recourse to Dark Burrows. In: The Pineal and Its Hormones (Reiter, R.J., ed.). New York: Alan R. Liss, p. 75-86, 1982. (Progress in Clinical and Biological Research, Vol. 92)
396. Melamed, E., F. Hefti, and R.J. Wurtman\*. Compensatory Mechanisms in the Nigrostriatal Dopaminergic System in Parkinson's Disease: Studies in an Animal Model. Israel Journal of Medical Sciences 18: 159-163, 1982.

397. Natelson, B.H., C. DeRoshia, and B.E. Levin.<sup>1</sup> Physiological Effects of Bed Rest (Letter). Lancet 1(8262): 51, 1982.
398. Reinstein, D.K., T. DeBoissiere, N. Robinson, and R.J. Wurtman\*. Radial Maze Performance in Three Strains of Mice: Role of the Fimbria/Fornix. Brain Research 263: 172-176, 1983.
399. Winget\*, C.M., N.W. Hetherington, and L.S. Rosenblatt. Analysis of Waveforms of Biologic Time Series (Abstract). Biophysical Journal 37: 71a, 1982.
400. Wurtman, J.J., P.L. Moses, and R.J. Wurtman\*. Prior Carbohydrate Consumption Affects the Amount of Carbohydrate That Rats Choose to Eat. Journal of Nutrition 113: 70-78, 1983.
401. Wurtman\*, R.J. Behavioural Effects of Nutrients. Lancet 1(8334): 1145-1147, 1983.
402. Wurtman\*, R.J. Effects of Parenteral Amino Acid Mixtures on the Nervous System. In: New Aspects of Clinical Nutrition (Kleinberger, G. and E. Deutsch, eds.). New York: S. Karger, p. 464-473, 1983.

---

1. Winget, C.M., Principal Investigator

## General Biomedical Research

403. Agharanya, J.C. and R.J. Wurtman\*. Effect of Acute Administration of Large Neutral and Other Amino Acids on Urinary Excretion of Catecholamines. Life Sciences 30: 739-746, 1982.
404. Agharanya, J.C. and R.J. Wurtman\*. Studies on the Mechanism by Which Tyrosine Raises Urinary Catecholamines. Biochemical Pharmacology 31: 3577-3580, 1982.
405. Alonso, R., C.J. Gibson, R.J. Wurtman\*, J.C. Agharanya, and L. Prieto. Elevation of Urinary Catecholamines and Their Metabolites Following Tyrosine Administration in Humans. Biological Psychiatry 17: 781-790, 1982.
406. Cashin, W.L., D.H. Blankenhorn, S.H. Brooks, and R.H. Selzer\*. Computer Automated Vessel Edge Finding for Coronary Atherosclerosis Studies (Abstract). American Journal of Cardiology 49: 997, 1982.
407. Cesario, T.C. and J.G. Tilles\*. Interactions Between Body Fluids, Chemotherapeutic Agents and Interferon. Texas Reports on Biology and Medicine 41: 359-362, 1981-1982.
408. Fabricant\*, J.D. Life Sciences Experiments for a Space Platform/Station. Paper Presented at the 12th Intersociety Conference on Environmental Systems, San Diego, Ca, July 19-21, 1982, 11 p. (SAE-PAPER-82-0834)
409. Feller\*, D.D. Effects of Hypergravity of Rat Liver Regeneration. In: Space Gerontology (Miquel, J.; A.C. Economos, eds.). NASA, Washington, D.C., p. 53-54, 1982. (NASA-CP-2248)
410. Gibson, C.J., C.J. Watkins, and R.J. Wurtman\*. Tyrosine Administration Enhances Dopamine Synthesis and Release in Light-Activated Rat Retina. Journal of Neural Transmission 56: 153-160, 1983.
411. Growdon, J.H., E. Melamed, M. Logue, F. Hefti, and R.J. Wurtman\*. Effects of Oral L-Tyrosine Administration on CSF Tyrosine and Homovanillic Acid Levels in Patients with Parkinson's Disease. Life Sciences 30: 827-832, 1982.
412. Hestenes, J.D., J.A. Rooney\*, D.H. Blankenhorn, R.H. Selzer\*, and H.P. Chin. Improved Methodologies for Serial Ultrasonic Studies of Cardiovascular Function. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 93-94, 1983.
413. Kandasamy, S.B., K. Jawaharlal, and B.A. Williams\*. Opposing Actions of Dibutylr1 Cyclic AMP and GMP on Food Intake in Guinea Pigs (Abstract). Federation Proceedings 42: 903, 1983.

414. Kandasamy, S.B. and B.A. Williams\*. Central Effects of Some Peptide and Non-Peptide Opioids and Naloxone on Thermoregulation in the Rabbit. In: Environment, Drugs and Thermoregulation (Lomax, P. and E. Schonbaum, eds.). New York: S. Karger, p. 98-100, 1983.
415. Kandasamy, S.B. and B.A. Williams\*. Effect of Naloxone on beta-Endorphin, (D-ALA<sup>2</sup>)-Methionine-Enkephalinamide, Pyrogen, Arachidonic Acid, PGE<sub>2</sub>, PGI<sub>2</sub>, Dibutyryl cAMP and Norepinephrine-Induced Hyperthermia in the Conscious Rabbit (Abstract). Federation Proceedings 41: 1349, 1982.
416. Kandasamy, S.B. and B.A. Williams\*. Hyperthermic Responses to Central Injections of Some Peptide and Non-Peptide Opioids in the Guinea-Pig. Neuropharmacology 22: 621-628, 1983.
417. Kandasamy, S.B. and B.A. Williams\*. Opposing Actions of Dibutyryl Cyclic AMP and GMP on Temperature in Conscious Guinea-Pigs. Neuropharmacology 22: 65-70, 1983.
418. Kandasamy, S.B. and B.A. Williams\*. Prostacyclin-Induced Hyperthermia: Implication of a Protein Mediator. Neuropharmacology 21: 1065-1072, 1982.
419. Kaufman, B.M. and R.A. Goldsby\*. Epitope Ratio Analysis (ERA): A Simple Radioimmunological Method Using Monoclonal Antibodies for the Simultaneous Analysis of Several Antigens. Journal of Immunological Methods 54: 1-7, 1982.
420. Leonard, J.I.<sup>1</sup> Computer Simulation Analysis of the Behavior of Renal-Regulating Hormones During Hypogravic Stress (Abstract). Physiologist 25(4): 195, 1982.
421. Leonard, J.I.<sup>1</sup> Computer Simulation Analysis of the Behavior of Renal-Regulating Hormones During Hypogravic Stress. Physiologist 25(6, Suppl.): S65-S66, 1982.
422. Leprohon, C.E., J.K. Blusztajn, and R.J. Wurtman\*. Dopamine Stimulation of Phosphatidylcholine (Lecithin) Biosynthesis in Rat Brain Neurons. Proceedings of the National Academy of Sciences USA 80: 2063-2066, 1983.
423. Maher, T.J., B.S. Glaeser, J.D. Fernstrom, and R.J. Wurtman\*. Variations in Plasma Levels of Amino Acids: Effect of Dietary Protein Intake (Abstract). Federation Proceedings 42: 541, 1983.
424. Millington, W.R. and R.J. Wurtman\*. Choline Administration Elevates Brain Phosphorylcholine Concentrations. Journal of Neurochemistry 38: 1748-1752, 1982.

---

1. R.J. White, Principal Investigator

425. Millington, W.R. and R.J. Wurtman\*. Choline and Physostigmine Enhance Haloperidol-Induced HVA and DOPAC Accumulation. European Journal of Pharmacology 80: 431-434, 1982.
426. Mondon, C.E., C.B. Dolkas\*, and G.M. Reaven\*. Enhanced Insulin Sensitivity with Exercise Training--How Long Does it Last? (Abstract). Clinical Research 31: 94A, 1983.
427. Mondon, C.E., C.B. Dolkas\*, and G.M. Reaven\*. Insulin Sensitivity of Exercise Trained Rats Following Confinement in Small Space Flight Size Cages (Abstract). Physiologist 25(4): 304, 1982.
428. Nouchedehi, J.M., R.J. White\*, and C.D.R. Dunn\*. An Analysis of Variance Program for the Evaluation of Results of Parallel Line Assays. Computer Programs in Biomedicine 14: 197-206, 1982.
429. Oishi, T. and R.J. Wurtman\*. Effect of Tyrosine on Brain Catecholamine Turnover in Reserpine-Treated Rats. Journal of Neural Transmission 53: 101-108, 1982.
430. Pan, R.M.-D., C. Mauron, B. Glaeser, and R.J. Wurtman\*. Effect of Various Oral Glucose Doses on Plasma Neutral Amino Acid Levels. Metabolism 31(9, Suppl.): 937-943, 1982.
431. Rekart, M., K. Rupnik, T.C. Cesario, and J.G. Tilles\*. Prevalence of Hemagglutination Inhibition Antibody to Current Strains of the H3N2 and H1N1 Subtypes of Influenza A Virus in Sera Collected from the Elderly in 1976. American Journal of Epidemiology 115: 587-597, 1982.
432. Rooney\*, J.A. and R.C. Heyser. The Use of Swept-Frequency Ultrasonic Techniques for Quantitative Bubble Detection. In: Preprints of 1983 Annual Scientific Meeting, Aerospace Medical Association, Houston, TX, May 23-26, 1983. Washington, D.C.: Aerospace Medical Association, p. 120-121, 1983.
433. Selzer\*, R.H. Atherosclerosis Quantitation by Computer Image Analysis. Paper Presented at the Workshop on Quantitative Evaluation of Atherosclerosis, NIH, Bethesda, MD, February 22-23, 1982, 22 p.
434. Sonnenfeld, G., E.R. Morey\*, J.A. Williams, and A.D. Mandel\*. Effect of a Simulated Weightlessness Model on the Production of Rat Interferon. Journal of Interferon Research 2: 467-470, 1982.
435. Small, D.H. and R.J. Wurtman\*. Identification of a Major Brain Serotonin-Binding Protein, Serophysin, as Tubulin (Abstract). Federation Proceedings 42: 496, 1983.
436. Srikskumaran, S., R.A. Goldsby\*, and A.J. Guidry. Monoclonal Bovine IgG<sub>1</sub>, IgG<sub>2</sub> and IgM from Interspecific Hybrids (Abstract). Federation Proceedings 41: 598, 1982.

437. Srinivasan, R. and J.I. Leonard.<sup>1</sup> Comparison of Cardiovascular Effects of Space Flight and Its Analogs Using Computer Simulations (Abstract). Physiologist 25(4): 195, 1982.
438. Srinivasan, R. and J.I. Leonard.<sup>1</sup> Comparison of Cardiovascular Effects of Space Flight and Its Analogs Using Computer Simulations. Physiologist 25(6, Suppl.): S61-S62, 1982.
439. White\*, R.J., R.C. Croston, and D.G. Fitzjerrell. Cardiovascular Modeling - Simulating the Human Response to Exercise, Lower Body Negative Pressure, Zero Gravity and Clinical Conditions. In: Cardiovascular Engineering, Pt. 1 - Modelling (Ghista, D.N., E. Van Vollenhoven, W.J. Yang, H. Reul, and W. Bleifeld, eds.). New York: S. Karger, p. 195-229, 1983. (Advances in Cardiovascular Physics, Vol. 5, Pt. 1)
440. White\*, R.J., D.G. Fitzjerrell, and R.C. Croston. Fundamentals of Lumped Compartmental Modelling of the Cardiovascular System. In: Cardiovascular Engineering, Pt. 1 - Modelling (Ghista, D.N., E. Van Vollenhoven, W.J. Yang, H. Reul, and W. Bleifeld, eds.). New York: S. Karger, p. 162-184, 1983. (Advances in Cardiovascular Physics, Vol. 5, Pt. 1)
441. White\*, R.J., J.I. Leonard, J.A. Rummel, and C.S. Leach\*. A Systems Approach to the Physiology of Weightlessness. Journal of Medical Systems 6: 343-358, 1982.
442. Williams\*, B.A. and S.B. Kandasamy. Central Effect of Dibutyryl cAMP and Dibutyryl cGMP on the Temperature Response of the Conscious Guinea Pig (Abstract). Federation Proceedings 41: 977, 1982.
443. Wurtman\*, R.J. Nutrients That Modify Brain Function. Scientific American 246(4): 50-59, 1982.
444. Wurtman\*, R.J. and S.H. Zeisel. Brain Choline: Its Sources and Effects on the Synthesis and Release of Acetylcholine. In: Alzheimer's Disease: A Report of Progress (Corkin, S., et al., eds.). New York: Raven, p. 303-313, 1982. (Aging, Vol. 19)

---

1. R.J. White, Principal Investigator









1. Report No. NASA CR-3739		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Biomedical Research Publications: 1982-1983				5. Report Date October 1983	
				6. Performing Organization Code	
7. Author(s) Christopher Bolcik and Linda G. Pleasant				8. Performing Organization Report No.	
				10. Work Unit No.	
9. Performing Organization Name and Address Science Communication Studies Division of Continuing Education The George Washington University Washington, D.C. 20036				11. Contract or Grant No. NASW-3165	
				13. Type of Report and Period Covered Contractor Report	
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546				14. Sponsoring Agency Code EBT-3	
15. Supplementary Notes					
16. Abstract <p>List of publications supported by the Biomedical Research Program, Office of Space Science and Applications. Includes publications entered into the Life Sciences Bibliographic Database as of July 1983.</p> <p>For Previous edition see NASA CR-3587.</p>					
17. Key Words (Suggested by Author(s)) Cardiovascular Deconditioning; Motion Sickness; Bone Alterations; Muscle Atrophy; Blood Cell Alterations; Behavior and Performance			18. Distribution Statement Unclassified - Unlimited STAR Category 51		
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 52	22. Price* A04		



National Aeronautics and  
Space Administration

Washington, D.C.  
20546

Official Business

Penalty for Private Use, \$300

THIRD-CLASS BULK RATE

Postage and Fees Paid  
National Aeronautics and  
Space Administration  
NASA-451



**NASA**

POSTMASTER: If Undeliverable (Section 158  
Postal Manual) Do Not Return

---